

**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: Not visited

Observer(s): Information from Mark Colwell

Site Name: Sand Island, Humboldt Bay, Humboldt County, California

Ownership: California State Lands Commission but managed by Harbor District

● Location:

- Nearest City/Town: Arcata, CA
- Bay/Estuary/Waterbody: Arcata Bay within Humboldt Bay (north bay)
- Coordinates: Latitude ???? Longitude ?????
- UTM Coordinates: Northing ????? Easting: ?????

● Size:

- Total area of island or site: 1000 sq. m (0.24 a)
- Area of current historical suitable habitat: Not surveyed.
- Area of potential habitat: ~ 50 sq. m (540 sq. ft)

● Distance from East Sand Island: 592 km (368 mi)

● Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

● Type of site: Island Peninsula Lakeshore Rooftop Other \_\_\_\_\_

● Natural or Manmade?

★ Site Photographs? Y or (N)

● Structures present (i.e. roads, buildings, power lines, piers, etc.)? None

● Vegetative communities (i.e. forb, grass, shrub, tree): Salt marsh vegetation: mostly salt grass, Salicornia and some Spartina.

● Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Sand

● Site stability: Stable

● Topography and Site profile: Relatively flat

Comments: \_\_\_\_\_

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## Fish and Wildlife Resources

- Specific location, size, reproductive success of Caspian tern colony: ~25-50 adult terns observed in area in May and August 2002 and <5 unfledged young in juvenile plumage on island in August 2002 (M. Colwell pers. comm.)
- Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
Double-crested Cormorant	??	>150 pairs?	Mixed in with terns
- Prey Base (describe general type and distance from colony): Fish found in the bay include Pacific herring, Northern anchovy, cutthroat trout, coho and chinook salmon, jacksmelt, surfperch, and stickleback.

State or Federal listed fish species potential prey? ☒ Yes or No  
Species: Steelhead, chinook and coho salmon

- State or Federal listed wildlife/plants species associated with site: None ?

Management issues: \_\_\_\_\_

- Predators:

Avian (species; known occupancy/use of site):	<u>Northern harrier, peregrine falcon.</u>
Mammalian (species; known occupancy/access to site):	<u>None observed on island.</u>
- Disturbance (i.e. livestock, human, etc.): Some disturbance by hunters (only during waterfowl season), kayakers and other boaters, windsurfers, and jetskis.

Comments: Possible impacts from aquaculture farm (oysters) plots within 200 m of island.

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## Site Management

- Management History: Unknown
- Current Management: Unknown
- Management Potential: Foraging habitat does not appear to be limiting. Some vegetation removal may be necessary. Activities associated with nearby oyster beds (within 100 m) may disturb nesting Caspian terns. Discussions with the Harbor District and State of California are necessary.

**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 11, 2002 Observer(s): J. Dillon, N. Seto, T. Adelsbach, Giselle Downard, Tom Huffman

Site Name: **Knight Island, North Bay, pond 3, San Francisco Bay, Solano County, California**

Ownership: California Fish and Game

● Location:

- Nearest City/Town: Mare Island, Vallejo, California
- Bay/Estuary/Waterbody: San Francisco Bay
- Coordinates: Latitude N 38° 07' 24.5" Longitude W 122° 17' 42.3"
- Township, Range, Section: \_\_\_\_\_
- UTM Coordinates: Northing: 4219734 Easting: 561793.9 Zone: 10

● Size:

Total area of island or site: Pond ~ 125 ha (~ 309 a)  
Area of current/historical suitable habitat: ~ 0.8 ha (~ 2 a)  
Area of potential habitat: ~ 0.8 ha (~ 2 a)

- Distance from East Sand Island: ~909 km (~565 mi)
- Aerial photo obtained? Y or N Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

- Type of site: Island Peninsula Lakeshore Rooftop Other
- Natural or Manmade ★ Site Photographs? Y or N Number Taken: 4
- Structures present (i.e. roads, buildings, power lines, piers, etc.)? None
- Vegetative communities (i.e. forb, grass, shrub, tree): Mostly bare except along main dike of pond (which is mostly coyote bush).
- Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Silt, sand
- Site stability: Stable
- Topography and Site profile: Long string of islands, 3 - 4 feet elevation rise at various locations, that is connected at the south end to the outer dike.

Comments: Islands are believed to be old ditch spoil pile (thus the linear configuration). Water level looked unusually low. Other potential sites in the area include San Pablo Bay NWR (Cullinan Ranch) which is currently considering tidal restoration that would involve flooding the area with tidal water and creating islands to prevent wave build-up.

## Fish and Wildlife Resources

- Specific location, size, reproductive success of Caspian tern colony (if known): ~200 -300 prs

- Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
Forster's terns	?	279	
Double-crested cormorants	?	~ 62 pr	adjacent
White pelicans	?	Roosting in pond	
Black-necked stilt	?	4	

- Prey Base (describe general type and distance from colony): Topsmelt, sculpin, yellow-fin goby,  
Northern anchovy

State or Federal listed fish species potential prey? Yes or No

Species: Central Valley Steelhead, Coho and Sacramento River Winter-run Chinook Salmon  
(probably uncommon)

- State or Federal listed wildlife/plants species associated with site: California Clapper Rail,  
Splittail, Delta smelt, salmonids (primarily steelhead) and Western Snowy Plover  
Management issues: If site is restored to salt marsh for Clapper Rail and Harvest Mouse in the future,  
open water habitat with islands will no longer be available for Caspian terns. However, habitat  
restoration or enhancement efforts for Least Terns and Snowy Plovers will be compatible with  
Caspian terns management.

- Predators:

Avian (species; known occupancy/use of site): Gull

Mammalian (species; known occupancy/access to site): Fox, raccoons, skunk occur in area but there  
has been no evidence of predation in the colony.

- Disturbance (i.e. livestock, human, etc.): Uncommon, no public access.

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## Site Management

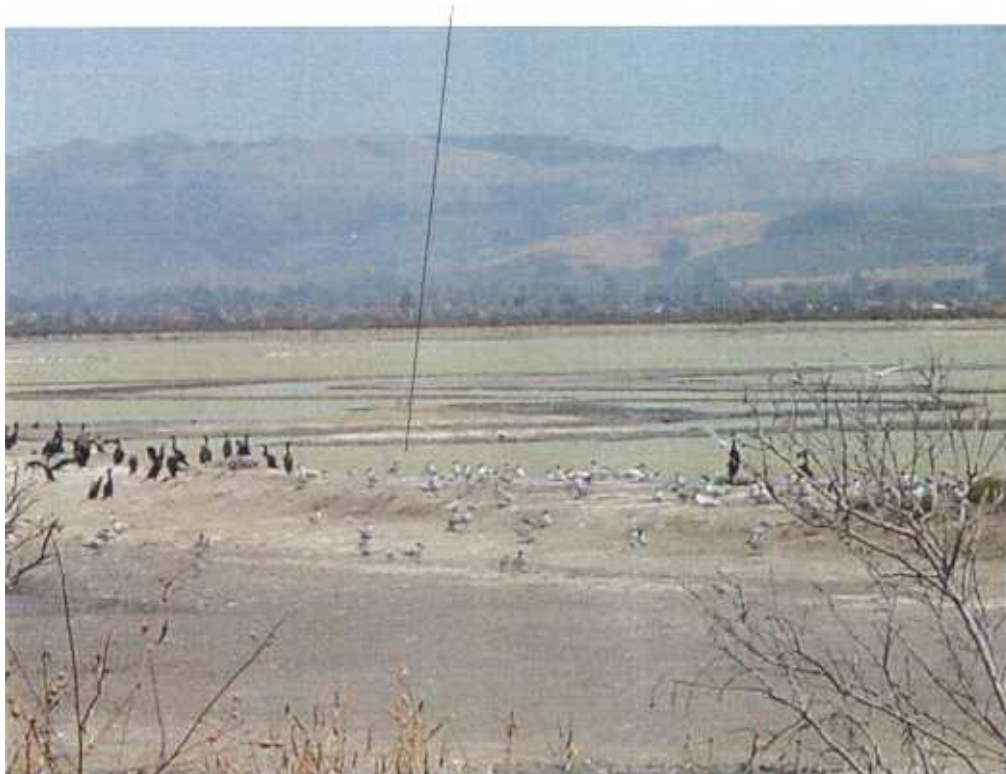
- Management History (describe): Cargil ownership, managed as salt pond.

- Current Management (describe): CA Fish and Game ownership and management. Little control of  
water; future plans include tidal restoration.

- Management Potential: This site is currently being used by nesting Caspian terns. CA Fish and Game is considering salt marsh restoration for this pond. This will involve breaching the dike and allowing tidal water influence. If this occurs, the islands may be flooded and the current Caspian tern nesting area will be lost. Currently, there are no plans to build-up the islands or build new ones. There are some plans to provide nesting area for colonial waterbirds in adjacent ponds owned by CA Fish and Game. Discussions with CA Fish and Game staff is necessary while they are still in planning stages to ensure that habitat restoration plans in the North Bay include habitat for Caspian terns.



**Tern nesting area (close up below)**



**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 11, 2002 Observer(s): J. Dillon, N. Seto, T. Adelsbach

Site Name: Brooks Island, San Francisco Bay, Contra Costa County, California

Ownership: East Bay Parks

● Location:

- Nearest City/Town: Richmond, CA
- Bay/Estuary/Waterbody: San Francisco Bay
- Coordinates: Latitude N 37° 54' 04.1" Longitude W 122° 21' 47.6"
- Township, Range, Section: \_\_\_\_\_
- UTM Coordinates: Northing: 4195034.5 Easting: 555997.6 Zone: 10

● Size:

- Total area of island or site: ~32.4 ha (~80 a)
- Area of current historical suitable habitat: ~ 0.1 ha (~ .25 a)
- Area of potential habitat: ~ 0.2 ha (~ .5 a)

● Distance from East Sand Island: ~933 km (~580 mi)

● Aerial photo obtained? Y or N Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

● Type of site: Island Peninsula Lakeshore Rooftop Other \_\_\_\_\_

● Natural or Manmade? ★ Site Photographs? Y or N Number Taken: 12

● Structures present (i.e. roads, buildings, power lines, piers, etc.)? Piers, caretaker home, wooden fence separating tip of island with public access from remainder of island.

● Vegetative communities (i.e. forb, grass, shrub, tree): Non-native iceplant covers most of the sandy spit/beach area, also non-native composite (bidens?). Remainder of island has upland grasses and a few trees.

● Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Sand and shell on spit where birds are nesting.

● Site stability: Stable

● Topography and Site profile: Western spit of island is flat with < 3-4 feet rise. A small saline lagoon is located on this spit. Main island is high (~120 ft elevation).

Comments: \_\_\_\_\_

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## Fish and Wildlife Resources

- Specific location, size, reproductive success of Caspian tern colony (if known): ~825 nests, 1,850-1,900 adults.

- Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
California Gull	?	243	adjacent
Western Gull	?	57	adjacent
Black Oystercatcher		3 prs	50-100 ft
Elegant Terns		Migrating through	

- Prey Base (describe general type and distance from colony): Topsmelt, sculpin, yellow-fin goby, Northern anchovy

State or Federal listed fish species potential prey? ☒ Yes or No

Species: Coho Salmon, Central Valley Steelhead, Winter-run Chinook Salmon

- State or Federal listed wildlife/plants species associated with site: Potentially California Least Tern, Western Snowy Plover

Management issues: None, species require similar habitat.

- Predators:

Avian (species; known occupancy/use of site): Gull, but not commonly observed taking tern eggs or chicks. Peregrine Falcon nesting on Bay Bridge and could be a predator.

Mammalian (species; known occupancy/access to site): None, rats observed on rocky jetty to the west of island, but have not been observed on island yet.

- Disturbance (i.e. livestock, human, etc.): Public can land on beach near colony. Nesting area is posted closed, but not strictly enforced.

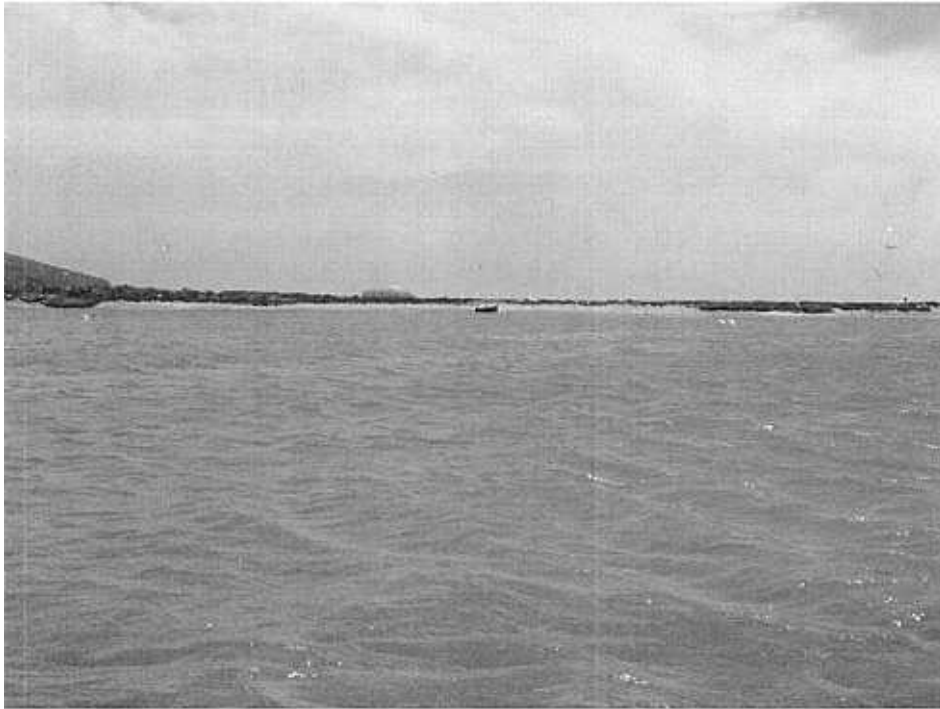
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## Site Management

- Management History (describe): No active management.
- Current Management (describe): No active management. Caretakers live on island.

- Management Potential: This site is currently being used by nesting Caspian terns and gulls. Currently, not all of the available habitat is being used and therefore habitat availability does not seem to be a limiting factor on Brooks Island. The island is protected within the East Bay Park system and thus is a stable, long term colony site. Possible improvements could include: (1) enforcement to eliminate any potential human activity in the colony, (2) clearing vegetation to provide more open sandy nesting habitat that would be further inland from the shoreline and thus possibly more protected, and (3) using decoys and recordings to attract more Caspian terns to the island.





View of spit from a distance, above, and spit with high portions of Brooks Island in the background from public landing area (western end of spit). Terns and gulls all nest within the closed area on the spit.





**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 12, 2002 Observer(s): J. Dillon, N. Seto, C. Bandy, Rachel ?

Site Name: Runway wetland, Alameda NWR, Alameda County, California

Ownership: US Navy but U.S. Fish and Wildlife management associated with overlay refuge

● Location:

- Nearest City/Town: Alameda, CA
- Bay/Estuary/Waterbody: San Francisco Bay
- Coordinates: Latitude N 37° 46' 45.1" Longitude W 122° 18' 46.5"
- Township, Range, Section: \_\_\_\_\_
- UTM Coordinates: Northing: 4181536 Easting: 560517.4 Zone: 10

● Size:

Total area of island or site ~12 ha (~30 a)  
Area of current/historical suitable habitat: None  
Area of potential habitat: ~12 ha (~30 a)

● Distance from East Sand Island: ~949 km (~590 mi)

● Aerial photo obtained? Y or N Date/Source of Aerial Photo: Refuge/ 28 Mar 96

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**Site Description**

● Type of site: Island Peninsula Lakeshore Rooftop Other Wetland adjacent to old runway

● Natural or Manmade ★ Site Photographs? Y or N Number Taken: 3

● Structures present (i.e. roads, buildings, power lines, piers, etc.)? None

● Vegetative communities (i.e. forb, grass, shrub, tree): Non-native iceplant, low grasses and shrubs

● Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Soil, fill material

● Site stability: Stable

● Topography and Site profile: Relatively flat with an adjacent upland area area (2-3 feet rise) northeast of the wetland.

Comments: Wetland is created by fall and winter rainfall as well as tidal waters from a one-way tide gate. Possible contaminant issue associated with storm water runoff from runway that completely drains into this wetland.

## Fish and Wildlife Resources

- Specific location, size, reproductive success of Caspian tern colony (if known): None
- Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
None			
- Prey Base (describe general type and distance from colony): Topsmelt, sculpin, yellow-fin goby, Northern anchovy,  
State or Federal listed fish species potential prey? ☒ Yes or No  
Species: Coho Salmon, Central Valley Steelhead, Winter-run Chinook Salmon
- State or Federal listed wildlife/plants species associated with site: CaliforniaLeast Tern  
Management issues: None because current nesting colony is not within site
- Predators:

<u>Avian (species; known occupancy/use of site):</u>
<u>Gull, Peregrine Falcon, American Kestrel, and Northern Harrier</u>
<u>Mammalian (species; known occupancy/access to site):</u>
<u>Skunk, raccoons, gray fox and feral cats.</u>
- Disturbance (i.e. livestock, human, etc.): No public access at this time, but Refuge is considering developing a trail system after ownership is transferred.

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## Site Management

- Management History (describe): Artificially constructed site (part of artificially constructed runway for Alameda Naval Air Facility). Tide gate allows water into wetland at high tides (one way inflow). The site is included in the proposed Alameda National Wildlife Refuge.
- Current Management (describe): No active management; currently in base closure mode until ownership and management is transferred to SF Bay NWR Complex (not sure about time frame).
- Management Potential: The US Navy is currently closing Alameda Naval Air Facility and is undergoing environmental cleanup efforts. After cleanup is completed, the property will be turned over to the USFWS and be managed as part of the SF Bay NWR Complex. One of the goals of the Alameda NWR Comprehensive Conservation Plan includes preserving, maintaining, and enhancing habitat for migratory birds. A specific objective is focused on maintaining and restoring habitat for the historic nesting site for Caspian terns on the west wetland the Refuge. However, major contaminant concerns exist for that site. Thus, this site could be an alternative nesting site for Caspian terns on Alameda Island. As mentioned above, the actual ownership transfer date has not been determined, thus, it is unclear when this site would be available for Caspian terns. Restoration needs include clearing grass and shrub vegetation to expose soil for nesting birds and predator control. Future vegetation control may be necessary if vegetation grows up extensively between the nesting season. In addition, decoys and recordings may be necessary to initially attract birds to this new site.



View of the upland area northeast of the wetland, above.  
View of the wetland, below



**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 12, 2002 Observer(s): J. Dillon, N. Seto, C. Bandy, Rachel ?

Site Name: West wetland, Alameda NWR, Alameda County, California

Ownership: US Navy

● Location:

- Nearest City/Town: Alameda, CA
- Bay/Estuary/Waterbody: San Francisco Bay
- Coordinates: Latitude N 37° 46' 53.5" Longitude W 122° 19' 44.2"
- Township, Range, Section: \_\_\_\_\_
- UTM Coordinates: Northing: 4181772 Easting: 559096.7 Zone: 10

● Size:

Total area of island or site: ~ 40.4 ha (~ 100 a)  
Area of current (historical) suitable habitat: ~ 12 ha (~ 30 a)  
Area of potential habitat: ~ 12 ha (~ 30 a)

● Distance from East Sand Island: ~949 km (~590 mi)

● Aerial photo obtained? Y or N Date/Source of Aerial Photo: Refuge /28 Mar96

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**Site Description**

● Type of site: Island Peninsula Lakeshore Rooftop Other Former landfill with wetland adjacent to old runway

● Natural or Manmade? ★ Site Photographs? Y or N Number Taken: 5

● Structures present (i.e. roads, buildings, power lines, piers, etc.): None

● Vegetative communities (i.e. forb, grass, shrub, tree): low grasses and shrubs

● Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Soil, fill material

● Site stability: Stable

● Topography and Site profile: Entire site rises ~ 10 feet from runway. Site itself is relatively flat with wetland and vegetated area lower than protective berm around the perimeter.

Comments: Possible contaminant issue with former landfill. Degree of environmental cleanup is uncertain and timing of transfer to USFWS ownership is dependent upon this cleanup.

## Fish and Wildlife Resources

- Specific location, size, reproductive success of Caspian tern colony (if known): None
- Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
Gull		?	
Black-necked stilt		?	
- Prey Base (describe general type and distance from colony): Topsmelt, sculpin, yellow-fin goby,  
Northern anchovy,  
State or Federal listed fish species potential prey? ☒ Yes or No  
Species: Coho Salmon, Central Valley Steelhead, Winter-run Chinook Salmon
- State or Federal listed wildlife/plants species associated with site: California Least Tern  
Management issues: None because current nesting colony is not within site.
- Predators:  
Avian (species; known occupancy/use of site): Gull, Peregrine Falcon, American Kestrel, and  
Northern Harrier  
Mammalian (species; known occupancy/access to site): Skunk, raccoons, gray fox and feral cats.
- Disturbance (i.e. livestock, human, etc.): No public access at this time, but Refuge is considering  
developing a trail system after ownership is transferred.

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## Site Management

- Management History (describe): Former landfill site for Alameda Naval Air Facility. The site  
is included in the proposed Alameda National Wildlife Refuge.
- Current Management (describe): No active management; currently in base closure mode until  
ownership and management is transferred to SF Bay NWR Complex (not sure about time  
frame).
- Management Potential: The US Navy is currently closing Alameda Naval Air Facility and is undergoing environmental cleanup efforts. After cleanup is completed, the property will be turned over to the USFWS and will be managed as part of the SF Bay NWR Complex. The Refuge has developed an objective within the Alameda NWR Comprehensive Conservation Plan that includes maintaining habitat on this site for a minimum of 300 pairs of nesting Caspian terns while also restoring remaining habitat to increase the colony size to early 1990 levels (1,000 nesting pairs). Thus, this Caspian tern colony and site has high potential to be restored. However, contaminant issues on this former landfill site is a large concern. Navy clean-up efforts are still being discussed with USFWS and thus, it is unclear when this site would be available for nesting Caspian terns. Restoration needs include clearing grass and shrub vegetation to expose soil for nesting birds and predator control. Future vegetation control may be necessary if vegetation grows up extensively between the nesting season. In addition, decoys and recordings may be necessary to initially attract birds back to this historic site.



General location of historic nesting area, above.  
View from the south end of the wetland, below.



**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 10, 2002 Observer(s): Jeff Dillon, Nanette Seto, Terry Adelsbach, Dave Shuford, Joelle Buffa, Janet Hansen

Site Name: A7 pond, 3 islands, San Francisco Bay, Santa Clara County, California

Ownership: Private (Cargill Co.), but soon to be transferred to SF Bay NWR Complex, USFWS

● Location:

- Nearest City/Town: Milpitas, CA
- Bay/Estuary/Waterbody: San Francisco Bay
- Coordinates: Latitude N 37° 26' 28" Longitude W 122° 00' 19.5"
- Township, Range, Section: \_\_\_\_\_
- UTM Coordinates: Northing: 4144272.8 Easting: 587993.56 Zone: 10

● Size:

Total area of island or site (pond) ~ 83 ha (~ 206 a)  
Area of current historical suitable habitat: ~ 0.02 ha (~.04 a)  
Area of potential habitat: ~ 0.02 ha (~.04 a)

- Distance from East Sand Island: ~985 km (~615 mi)
- Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

- Type of site: Island Peninsula Lakeshore Rooftop Other
- Natural or Manmade ★ Site Photographs? (Y) or N Number Taken: 3
- Structures present (i.e. roads, buildings, power lines, piers, etc.)? One duck blind on each island
- Vegetative communities (i.e. forb, grass, shrub, tree): None
- Soil substrate (i.e. sand, gravel, silt, cobble, etc.) Silt, sand
- Site stability: Stable
- Topography and Site profile: relatively flat (max 3 feet at high point), gradual edges

Comments: Water level was higher than 2 wks prior when Terry last visited. Some Caspian tern nests may have been flooded (some of Terry's flags used to monitor nest sites were partly under water). Cargill still manages the water level in this pond for salt harvest.



## Fish and Wildlife Resources

- Specific location, size, reproductive success of Caspian tern colony (if known): ~75-80 prs

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- Colonial Nesting Waterbirds:
 

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
American Avocet	?	Nesting	
White Pelicans	?	Not nesting	
- Prey Base (describe general type and distance from colony): Topsmelt, sculpin, yellow-fin goby,  
Northern anchovy
- State or Federal listed fish species potential prey? Yes or No  
 Species: Coho Salmon, Central Valley Steelhead, Winter-run Chinook Salmon
- State or Federal listed wildlife/plants species associated with site: California Clapper Rail,  
California Least Tern, Harvest Mouse, and Western Snowy Plover.
- Management issues: If site is restored to salt marsh for Clapper Rail and Harvest Mouse in  
the future, open water habitat with islands will no longer be available for Caspian terns.  
However, habitat restoration or enhancement efforts for Least Terns and Snowy Plovers will  
be compatible with Caspian tern management.
- Predators:
 

Avian (species; known occupancy/use of site): Large gull colony approximately 15,000 ft away  
at Knapp Island.

Mammalian (species; known occupancy/access to site): Fox, raccoons, skunk
- Disturbance (i.e. livestock, human, etc.): No public access, no other potential disturbance.

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## Site Management

- Management History (describe) Owned by Cargill Salt Co. and managed as a salt pond for salt  
harvest
- Current Management (describe): Continued to be managed as a salt pond but soon ownership  
and management will be transferred to SF Bay NWR Complex, predator control is conducted.
- Management Potential: This site is currently being used by nesting Caspian terns. Although the birds have not completely used up all available habitat, the duck blinds can be removed to slightly increase the nesting area. However, the total area will still be very small (~0.02 ha). As with many of the salt ponds located in south SF Bay, the Refuge is considering a number of long term habitat management options for this pond. One option being considered is salt marsh restoration. If this occurs, open water habitat with islands will no longer be available for Caspian terns. Another option would include building larger islands for various colonial nesting bird species. If this occurs, suitable habitat for Caspian terns would be created. Discussions with Refuge staff is necessary while the Refuge is still in early planning stages to ensure that habitat restoration plans include habitat for Caspian terns.



Two of 3 islands in distance, above, and close up of one island, below.



**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 10, 2002 Observer(s): Jeff Dillon, Nanette Seto, Terry Adelsbach, Dave Shuford, Joelle Buffa, Janet Hansen

Site Name: A16 pond, 4 islands, San Francisco Bay, Santa Clara County, California

Ownership: SF Bay NWR Complex, USFWS

● Location:

- Nearest City/Town: Milpitas, CA
- Bay/Estuary/Waterbody: San Francisco Bay
- Coordinates: Latitude N 37° 26' 25" Longitude W 121° 57' 37"
- Township, Range, Section: \_\_\_\_\_
- UTM Coordinates: Northing: 4144223 Easting: 591975.25 Zone: 10

● Size:

Total area of island or site (pond) ~ 116 ha (286 a)  
Area of current/historical suitable habitat: None  
Area of potential habitat: 0.1 ha (<.25 a)

● Distance from East Sand Island: ~985 km (~615 mi)

● Aerial photo obtained? Y or N Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

● Type of site: Island Peninsula Lakeshore Rooftop Other

● Natural or Manmade ★ Site Photographs? Y or N Number Taken: 4

● Structures present (i.e. roads, buildings, power lines, piers, etc.)? None

● Vegetative communities (i.e. forb, grass, shrub, tree): None

● Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Silt, sand

● Site stability: Stable, islands created in 1996/97.

● Topography and Site profile: Long and narrow with steep slopes and relatively flat (rough and bumpy) plateau in the middle (max 4-5 feet high).

Comments: Foam develops in pond and gets deposited on shoreline of island. There is concern that the foam can cover colonial waterbird chicks and potentially cause a problem (T. Adelsbach pers. comm.).

## Fish and Wildlife Resources

- Specific location, size, reproductive success of Caspian tern colony (if known): None
- Colonial Nesting Waterbirds:
 

Species	Years of Occupancy	Colony Size	Distance from Caspian Terns
Forster's Tern	1996/97 to present	?	
American Avocet	1996/97 to present	?	
Black-necked Stilt	1996/97 to present	?	
Black Skimmer	2002	2	
- Prey Base (describe general type and distance from colony): Topsmelt, sculpin, yellow-fin goby, Northern anchovy
- State or Federal listed fish species potential prey? ☒ Yes or No  
 Species: Coho Salmon, Central Valley Steelhead, Winter-run Chinook Salmon
- State or Federal listed wildlife/plants species associated with site: California Clapper Rail, California Least Tern, Harvest Mouse, and Western Snowy Plover  
 Management issues: If site is restored to salt marsh for Clapper Rail and Harvest Mouse in the future, open water habitat with islands will no longer be available for Caspian terns. However, habitat restoration or enhancement efforts for Least Terns and Snowy Plovers will be compatible with Caspian tern management.
- Predators:
 

Avian (species; known occupancy/use of site): Large gull colony approximately 15,000 ft away at Knapp Island.

Mammalian (species; known occupancy/access to site): Fox, raccoons, skunk
- Disturbance (i.e. livestock, human, etc.): Trail system nearby but not a disturbance issue.

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## Site Management

- Management History (describe): Previously owned by Cargill Salt Co. and managed as a salt pond for salt harvest.
- Current Management (describe): Refuge owns site (since 1970's) with no active management on the island itself. Cargill retains salt harvest rights and therefore, manages the water levels in the pond. Currently, there are plans for Cargill to stop harvesting salt and turnover water management rights to the Refuge (expected sometime in late 2002 or 2003). The Refuge is considering tidal restoration alternatives for this and adjacent salt ponds. Currently, predator control is conducted.
- Management Potential: The current habitat is suitable as potential Caspian tern nesting habitat but none have attempted to nest since the island was constructed in 1996/97. There is ~0.1 ha of available nesting habitat and no habitat enhancement is necessary, but decoys and recordings can be used to attract Caspian terns to the island. As with many of the salt ponds located in south SF Bay, the Refuge is considering a number of long term habitat management options for this pond. One option being considered is salt marsh restoration. If this occurs, open water habitat with islands will no longer be available for Caspian terns. Another option would include building larger islands for various colonial nesting bird species. If this occurs, suitable habitat for Caspian terns would be created. Discussions with Refuge staff is necessary while the Refuge is still in early planning stages to ensure that habitat restoration plans include habitat for Caspian terns.



**Island in distance, above, and close up below.**



**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 10, 2002 Observer(s): J. Dillon, N. Seto, T. Adelsbach, D. Shuford,

Site Name: Baumberg, pond 10, San Francisco Bay, Alameda County, California

Ownership: Private (Cargil Co.), but soon to be transferred to California Fish and Game

● Location:

- Nearest City/Town: Hayward, CA
- Bay/Estuary/Waterbody: San Francisco Bay
- Coordinates: Latitude N 37° 36' 42.8" Longitude W 122° 08' 51.7"
- Township, Range, Section: \_\_\_\_\_
- UTM Coordinates: Northing: 4163071.8 Easting: 575241 Zone: 10

● Size:

Total area of island or site: Pond ~ 125 ha (~ 309 a)

Area of current historical suitable habitat: < 0.1 ha (~.009 a)

Area of potential habitat: < 0.1 ha (~.009 a)

● Distance from East Sand Island: ~969 km (~6-2 mi)

● Aerial photo obtained? Y or N Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

● Type of site: Island Peninsula Lakeshore Rooftop Other \_\_\_\_\_

● Natural or Manmade ★ Site Photographs? Y or N Number Taken: 5

● Structures present (i.e. roads, buildings, power lines, piers, etc.)? None

● Vegetative communities (i.e. forb, grass, shrub, tree): Mostly bare but some clusters of pickleweed.

● Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Silt, sand

● Site stability: Stable

● Topography and Site profile: Relatively flat (max <5 feet at high point), gradually sloped edges.

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Fish and Wildlife Resources

- Specific location, size, reproductive success of Caspian tern colony (if known) ~80 prs
- Colonial Nesting Waterbirds:
 

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
Forster's Terns		?	
Double-crested Cormorants		roosting	
White Pelicans		~25 roosting	
- Prey Base (describe general type and distance from colony): Topsmelt, sculpin, yellow-fin goby,  
Northern anchovy  
 State or Federal listed fish species potential prey? ☒ Yes or No  
 Species: Coho Salmon, Central Valley Steelhead, Winter-run Chinook Salmon
- State or Federal listed wildlife/plants species associated with site: California Clapper Rail,  
California Least Tern, Harvest Mouse, and Western Snowy Plover  
 Management issues: If site is restored to salt marsh for Clapper Rail and Harvest Mouse in the  
future, open water habitat with islands will no longer be available for Caspian terns.  
However, habitat restoration or enhancement efforts for Least Terns and Snowy Plovers will  
be compatible with Caspian terns.
- Predators:
 

Avian (species; known occupancy/use of site): None

Mammalian (species; known occupancy/access to site): Fox, raccoons, skunk occur in area but  
there has been no evidence observed to indicate they can make it to the island.
- Disturbance (i.e. livestock, human, etc.): No public access, no other potential disturbance.

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## Site Management

- Management History (describe): Cargill ownership, managed as salt ponds (one of early ponds  
in system).
- Current Management (describe): Managed as a salt pond, predator control is conducted. Soon to  
be transferred to CA Fish and Game with potential plans for salt marsh restoration and habitat  
enhancement.
- Management Potential: This site is currently being used by nesting Caspian terns. As with many of the salt ponds located in south SF Bay, California Fish and Game is considering a number of long term habitat management options for this pond. One option being considered is salt marsh restoration. If this occurs, open water habitat with islands will no longer be available for Caspian terns. Another option would be to leave the pond and islands as they are for colonial nesting waterbirds. If this occurs, suitable habitat for Caspian terns would remain, however, islands can be enlarged to provide more habitat. Discussions with California Fish and Game staff is necessary while they are still in early planning stages to ensure that habitat restoration plans include habitat for Caspian terns.





**Island in distance, above, and close up, below.**



**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: October 4, 2002 Observer(s): Rebecca Goldman, Kriss Neuman, Dave Shuford

Site Name: Elkhorn Slough National Estuarine Research Reserve, Monterey County,  
California

Ownership: Managed by California Department of Fish and Game in partnership with the National  
Oceanic and Atmospheric Administration (NOAA).

● Location:

- Nearest City/Town: Moss Landing, CA
- Bay/Estuary/Waterbody: Elkhorn Slough is an estuary entering Monterey Bay
- Coordinates: Latitude N 36°48.6' Longitude W 121°44.7'
- UTM Coordinates: Northing: 4075263.8 Easting: 611489.06 Zone: 10

● Size:

- Total area of island or site: From 1992-2001, terns nested just on Boomerang Island  
(about 61m by 12m), but in 2002 they also nested on a smaller (~10 x 15 m), unnamed  
island to the south.
- Area of current/historical suitable habitat: Variable, see comment section below.
- Area of potential habitat: Potential habitat needs to be enhanced (vegetation removal) or  
created.

● Distance from East Sand Island: 1066 km (663 mi)

● Aerial photo obtained? (Y) or N Source of Aerial Photo: Kerstin Wasson, ESNERR biologist

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**Site Description**

● Type of site: (Island) Peninsula Lakeshore Rooftop Other \_\_\_\_\_

● Natural or (Manmade?) ★ Site Photographs (Y) or N Number Taken \_\_\_\_\_

● Structures present? The nesting colony is 175 m from active railroad tracks on a raised levee;  
some tern mortality has been attributed to collisions with trains. Colony area has a wooden blind  
on stilts.

● Vegetative communities: The salt marsh vegetation on the nesting islands is dominated by alkali  
heath (*Frankenia gransifolia*), Australian salt bush (*Atriplex semibaccata*), common pickleweed  
(*Salicornia virginica*), and salt grass (*Distichlis spicata*).

● Soil substrate: The island is created from dredge materials ( i.e., sediments from the bottom of  
the slough) and now consists of hard packed silt.

● Site stability: The nesting islands likely will not remain suitable for tern nesting without ongoing  
vegetation and erosion control. In recent years, vegetation has been trimmed prior to the breeding  
season to maintain suitable open habitat for nesting terns. As an aid in erosion control, vegetation  
on the periphery was not trimmed, and trimmed and pulled vegetation from the center was placed  
along the sides of the island. Additional measures will need to be taken to control erosion.

● Topography and Site profile: The nesting islands (surrounded at all tides by water) rise to only 1  
m above mean high water; the islands are flat topped with the sides varying from steep to  
gradually sloped.

Comments: Caspian terns formerly (1970-1980) nested within a 6.9-ha set of salt ponds on the north  
side of Elkhorn Slough; nest site in 1970 was a 100-meter-long eroded levee island; in 1979-1980, a  
dike continuous with the mainland. The current nesting islands were created from dredge materials  
as part of a wetland restoration project.

## Fish and Wildlife Resources

- Specific location, size, reproductive success of Caspian tern colony: The tern colony currently is on two small islands in the South Marsh area of Elkhorn Slough National Estuarine Reserve. From 1997-2002, the colony size ranged from 0-80 pairs (~50 pairs in 2002). Percent breeding success (chicks fledged/eggs laid x 100) was 46.4%, 2.6%, and 0% in 1994, 1995, and 1996, respectively (Parkin 1998). Poor reproductive success in 1995 was attributed to contaminants resuspended during flooding and in 1996 to predation (likely raccoon or red fox).
  
- Colonial Nesting Waterbirds:
 

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
Western gull	annually	8 pairs in 1989	within 10 m
  
- Prey Base (describe general type and distance from colony): The main prey of Caspian terns nesting at Elkhorn Slough are shiner surfperch, northern anchovy, silversides, crayfish, and Pacific staghorn sculpin (Parkin 1998). The terns forage mainly in Elkhorn Slough, Moss Landing Harbor, and along a 20-km stretch of near shore coastal waters between the Salinas and Pajaro rivers with Elkhorn Slough at its mid-point. State or Federal listed fish species potential prey? Yes or ☒ No  
 Species: \_\_\_\_\_
  
- State or Federal listed wildlife/plants species associated with site: Western snowy plovers nest in salt ponds.  
 Management issues: The former salt ponds are currently managed for nesting snowy plovers, and plans to restore habitat to the plovers' liking might accommodate management for other species, such as the Caspian tern (K. Neuman pers. comm.).
  
- Predators:
  - Avian (species; known occupancy/use of site): Peregrine falcon, western gull, barn owl, great horned owl.
  - Mammalian: Raccoon, coyote, red fox, skunk, long-tailed weasel, and Norway rat.
- Disturbance: Disturbance is likely minimal because of closure of the site to the public.

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### Site Management

- Management History: The Elkhorn Slough watershed has been impacted by diversion of fresh water for agriculture, degradation of water quality, and by closing off the natural opening to the ocean and dredging a more direct one. The latter is hastening tidal erosion thereby impacting the tern nesting islands.
  
- Current Management: The current nesting islands are within Elkhorn Slough National Estuarine Reserve managed by the California Department of Fish and Game. Vegetation has been trimmed on the islands to maintain their suitability for tern nesting. An area on the main nesting island, fenced to exclude predators, was not used by the terns despite the use of decoys to attract them. Other measures for predator deterrence have included nightly patrols and application of predator urine and a hot pepper solution along the railroad tracks.
  
- Management Potential: Numbers of nesting Caspian terns likely could be increased if vegetation was removed from nearby islands, if additional islands were created, or if a raft or barge was used as alternative nesting habitat. Erosion of islands could be reduced by installation of gates near the slough mouth to mute tidal action. Additional tern nesting habitat likely could be increased within the historic Moss Landing salt ponds if concerns for snowy plovers were addressed.

Reference: Parkin, J. 1998. Ecology of breeding Caspian Terns (*Sterna caspia*) in Elkhorn Slough, California. M.S. thesis, San Jose State University, San Jose, CA.

**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: October 4, 2002

Observer(s): Rebecca Goldman, Kriss Neuman, Dave Shuford

Site Name: Salinas River National Wildlife Refuge, Monterey County, California

Ownership: U.S. Fish and Wildlife Service (San Francisco Bay National Wildlife Refuge Complex).

- Location:
  - Nearest City/Town: Castroville, CA
  - Bay/Estuary/Waterbody: The tern colony is near the shore of a mainland brackish pond adjacent to the foredune of the beach and <1 km from the mouth of the Salinas River at Monterey Bay.
  - Coordinates: Latitude N 36°44.3' Longitude W 121°48.3'
  - UTM Coordinates: Northing: 4065962 Easting: 607144.94 Zone: 10
- Size:
  - Total area of island or site: The tern colony occupies an area <0.1 ha in size.  
Area of current historical suitable habitat: 10-20 times larger than that used.  
Area of potential habitat: Potential beach habitat occurs from the colony all the way to the Salinas River mouth and beyond.

- Distance from East Sand Island: 1074 km (667 mi)
- Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

- Type of site: Island Peninsula Lakeshore Rooftop (Other) Foredune of beach adjacent to brackish pond near a river mouth.
- (Natural) or Manmade? ★ Site Photographs? Y or (N) Number Taken: \_\_\_\_\_
- Structures present (i.e. roads, buildings, power lines, piers, etc.)? None in the vicinity of the tern colony except metal stakes and ropes to delineate the boundary of a zone closed to the public.
- Vegetative communities (i.e. forb, grass, shrub, tree): Sparse cover (<5%) of low-lying beach vegetation, primarily sea rocket (*Cakile maritima*).
- Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Beach sand
- Site stability: The physical setting changes depending on how reservoir releases or climatic events affect the opening or closing of the mouth of the nearby river or the size of the brackish pond. The river mouth is physically breached in the fall, and, except in very wet years, it closes off naturally in the spring. The foredune where the terns breed is relatively stable, though affected by wind erosion or deposition. Because the site is not insular, the tern colony likely will depend for its existence on continued closure of the area to the public and, particularly, ongoing predator control for snowy plovers.
- Topography and Site profile: The colony is on a relatively flat-topped hillock, ~ 1 m in elevation, by the shore of a brackish pond adjacent to the foredune of the beach and <1 km from the mouth of the Salinas River.

## Fish and Wildlife Resources

- Specific location, size, reproductive success of Caspian tern colony: The current colony site is <1 km from the mouth of the Salinas River. In 2002, the colony was estimated to be ~ 93 pairs (150 adults) and fledged a maximum of 81 young. This site has been occupied by nesting Caspian terns irregularly since 1983; recolonization in 1996 followed a predator-induced abandonment of the nearby Elkhorn Slough colony. Prior to 2002, the colony was smaller (maximum 34 nests) and reproductive success was poor (colony apparently failed in 1983 and definitely failed in 1996.
- Colonial Nesting Waterbirds:
 

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
American avocet	annually	at least 30 pairs	within colony to 200 m
Black-necked stilt	annually	<5 pairs	500 m
- Prey Base: The most numerous fish sampled at the Salinas River mouth/lagoon in 1990-1991 were Pacific herring, Sacramento blackfish, hitch, threespine stickleback, and Pacific staghorn sculpin (D. Kodama pers. comm.). The diet of terns at the Salinas River mouth, though, may be very similar to that of terns at the nearby Elkhorn Slough colony, as the foraging areas used by terns from these colonies likely overlap extensively (see Elkhorn Slough field form).  
 State or Federal listed fish species potential prey? Yes or No  
 Species: Steelhead
- State or Federal listed wildlife/plants species associated with site: Western snowy plover (coastal population)  
 Management issues: Caspian terns may attract flocks of roosting gulls, which could trample snowy plover nests; plover nests in the vicinity of the tern colony in 2002 were destroyed or abandoned. Terns may also exclude snowy plovers from prime chick-rearing areas on the shoreline of the pond. Conversely, the terns deter aerial predators, such as the northern harrier, from entering the area and preying on snowy plovers.
- Predators:
 

Avian: Northern harrier, peregrine falcon, barn owl, great horned owl, and various species of gulls.

Mammalian: Gray fox, red fox, coyote, raccoon, skunk, and long-tailed weasel.
- Disturbance (i.e. livestock, human, etc.): The colony site is closed to the public but disturbance may occur from people straying off a nearby heavily used trail.

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### Site Management

- Management History: In 1973, the site became part of the USFWS refuge system by a transfer of surplus military land (U.S. Army and U.S. Coast Guard). From 1974-1991, the land was managed as a state wildlife area under a cooperative agreement with California Department of Fish and Game.
- Current Management: Since 1991, the area has been managed as the Salinas River National Wildlife Refuge, with a focus on sensitive species, habitat enhancement, and public use management. Predator control to enhance reproductive success of snowy plovers began in 1993.
- Management Potential: Tern nesting habitat might be enhanced by creating an island within the brackish pond or by removing vegetation from an island within the Salinas River mouth/lagoon. Management of the latter island would have to contend with vegetation encroachment and erosion or inundation from irregular water releases from an upstream reservoir. Any such efforts would need to address any potential impacts upon the threatened western snowy plover.

**CASPIAN TERN FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 24, 2002 Observer(s): J. Dillon, C. Collins, K. Keane

Site Name: Terminal Island, Los Angeles County, California

Ownership: Port of Los Angeles, Los Angeles, California

- Location:
  - Nearest City/Town: Long Beach, California
  - Bay/Estuary/Waterbody: Pacific Ocean
  - Coordinates: Latitude N 33° 43' 01" Longitude W 118° 14' 53"
  - Township, Range, Section: \_\_\_\_\_
  - UTM Coordinates: Northing: 3731471.5 Easting: 384360.47 Zone: 11

- Size:
  - Total area of island of site: 6 ha (15 a)
  - Area of current historical suitable habitat: 9 ha (23 a)
  - Area of potential habitat: 9 ha (23 a)

- Distance from East Sand Island: 1,477 km (918 mi)

- Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

- Type of site: Island Peninsula Lakeshore Rooftop Other High traffic area

- Natural or Manmade ★ Site Photographs? (Y) or N Number Taken: 8

- Structures present (i.e. roads, buildings, power lines, piers, etc.)? 8-10 foot chain-link fence along north side of colony, 100-140 foot tall light poles with multiple lights.

- Vegetative communities (i.e. forb, grass, shrub, tree): Shrub/forb - sparse

- Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Sand, shell

- Site stability: Stable

- Topography and Site profile: Generally flat with a slight rise to the south (rock wall).

Comments: This is a mitigation site for the creation of the port terminal. The mitigation site is set at 15 acres. However, another adjacent 8 acres (currently used by terns) is slated for development.



## Fish and Wildlife Resources

- Specific location, size, reproductive success of Caspian tern colony (if known): 150 pairs;  
Located in the west unit (8-acre unit), many fledglings.
- Colonial Nesting Waterbirds:
 

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
Royal terns		~4-5 pair	
Elegant terns		~4-5,000 pairs	
Least terns		320 nest	
- Prey Base (describe general type and distance from colony): Anchovies, topsmelt
- State or Federal listed fish species potential prey? Yes or No  
Species: \_\_\_\_\_
- State or Federal listed wildlife/plants species associated with site Least terns
- Management issues: Early season harassment of larger tern species to allow Least terns to establish nesting sites.
- Predators:
 

Avian (species; known occupancy/use of site): Heermann's gull, peregrine falcon, kestrel, crows, black-crowned night-herons, western gulls

Mammalian: (species; known occupancy/access to site) Feral cats. Future problem may include rats which could inhabit boulder area along edge of property.
- Disturbance (i.e. livestock, human, etc.): Overflight of helicopters, researchers, vehicular traffic along the north chain-link fence.

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## Site Management

- Management History (describe): Area created in 2001; originally had over 81 hectares (200 a) when first built.
- Current Management (describe): Remove vegetation each spring to provide Least tern nesting habitat, monitor all tern colonies, banding Elegant tern chicks (3,000+ in 2002), predator control and fencing placed between Least tern colony and other tern colonies.
- Management Potential (describe): This site is currently used by Caspian terns for nesting. The current agreement with the Port of LA has the site at 15 acres. However, 8 adjacent acres are currently available for nesting terns. This 8 acres is slated for development. Either way, the area available is set at a defined limit. No further habitat can be gained except by removing the new construction. Therefore, the only potential opportunity is to acquire the adjacent 8 ac.

Comments: There is a three foot high plastic drift fence around the colony on three sides to keep chicks from getting into the large boulders on edge of property.





**Terminal Island (15-acre mitigation site)**



**Terminal Island (8-acre slated for development)**

**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 24, 2002 Observer(s): J. Dillon, C. Collins

Site Name: Upper Newport Bay Ecological Reserve, Orange County, California

Ownership: California Department of Fish and Game

- Location:
  - Nearest City/Town: Newport Bay, California
  - Bay/Estuary/Waterbody: San Diego Creek
  - Coordinates: Latitude N 33° 38' 43" Longitude W 117° 52' 15"
  - Township, Range, Section: \_\_\_\_\_
  - UTM Coordinates: Northings: 3723166.2 Eastings: 419246.4 Zone: 11

- Size:

	North Is.	South Is.
Total area of <u>island</u> or site:	<u>1.2-1.6 ha (3-4 a)</u>	<u>1.2-1.6 ha (3-4 a)</u>
Area of current/historical suitable habitat:	<u>same as above</u>	
Area of potential habitat:	<u>Can possibly enlarge by 1 acre or so</u>	

- Distance from East Sand Island: 1,495 km (929 mi)

- Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

- Type of site: Island Peninsula Lakeshore Rooftop Other \_\_\_\_\_

- Natural or Manmade ★ Site Photographs? (Y) or N Number Taken: 4

- Structures present (i.e. roads, buildings, power lines, piers, etc.)? None

- Vegetative communities (i.e. forb, grass, shrub, tree): Shrub, forbs, grass

- Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Silt, sand overlayer

- Site stability: Stable

- Topography and Site profile: A 2-4 foot rise above water level.

Comments: Islands were built for Least terns. Army Corps of Engineers are proposing to move larger island downstream (1/4 to 1/2 mile) and scoop around island near the shore to remove tidal flats to create a deep water channel. Contact name is Larry Smith, Ecosystem Planning Section, 213-452-3846.

## Fish and Wildlife Resources

- Specific location, size, reproductive success of Caspian tern colony (if known): None

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- Colonial Nesting Waterbirds:
 

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
Forster's terns		Unknown	
Least terns		~25 pairs but <50 pairs	
Black skimmers		300 - 350 pairs	
- Prey Base (describe general type and distance from colony): Anchovies, topsmelt, centrarchids

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- State or Federal listed fish species potential prey? Yes or No
- Species: \_\_\_\_\_

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- State or Federal listed wildlife/plants species associated with site: California least terns, light-footed clapper rail
- Management issues: \_\_\_\_\_

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- Predators:
  - Avian (species; known occupancy/use of site): Corvids
  - Mammalian (species; known occupancy/access to site): Occasionally a coyote or raccoon.

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- Disturbance (i.e. livestock, human, etc.): Area is protected but occasionally a kayaker may be in the area but usually do not land.

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Comments: \_\_\_\_\_

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## Site Management

- Management History (describe): Creation of two islands 10-15 years ago.

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- Current Management (describe): Twice annual black skimmer survey.

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- Management Potential (describe): This site has not been used by nesting Caspian terns. The two islands were created for Least tern colonies. The area around the islands needs to be dredged to provide a better buffer from mammalian predators. The dredge material could be used to enlarge the islands. Decoys and tape recordings would probably have to be used to entice the birds to nest. Caspian terns have been seen in the area so it is not unlikely that birds could be enticed to stay.

Comments: Need to consider dredging area around islands. Could use the material to enlarge the existing islands. A contact is Brian Shelton, CA F & G. 949-640-9958



**Upper Newport Bay, (closest island is termed the south island)**



**Upper Newport Bay, (change in tide level 20 minutes after top photo was taken)**

**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 24, 2002 Observer(s): J. Dillon, C. Collins

Site Name: Bolsa Chica Ecological Reserve, Orange County, California

Ownership: California Department of Fish and Game

● Location:

- Nearest City/Town: Huntington Beach, California
- Bay/Estuary/Waterbody: Pacific Ocean, Seal Beach Estuary
- Coordinates: Latitude N 33° 41' 39" Longitude W 118° 02' 30"
- Township, Range, Section: \_\_\_\_\_
- UTM Coordinates: Northing: 3728733.8 Easting: 403459.16 Zone: 11

● Size:

	North	South
Total area of <u>island</u> or site:	<u>1.7 ha (4.3 a)</u>	<u>1.7 ha (4.1 a)</u>
Area of current/historical suitable habitat:	<u>1.7 ha (4.3 a)</u>	<u>1.7 ha (4.1 a)</u>
Area of potential habitat:	<u>new islands</u>	

● Distance from East Sand Island: 1,485 km (923 mi)

● Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

● Type of site: Island Peninsula Lakeshore Rooftop Other

● Natural or (Manmade) ★ Site Photographs? (Y) or N Number Taken: 5 of north island

● Structures present (i.e. roads, buildings, power lines, piers, etc.)? Sunken blind pit to observe birds on north island.

● Vegetative communities (i.e. forb, grass, shrub, tree): Pickle weed

● Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Sand

● Site stability: Stable

● Topography and Site profile: A 1-4 foot rise above water level.

Comments: California Department of Fish and Game recently acquired ownership of all the lowlands between Pacific Hwy and the uplands to the east. No plans have been announced.



## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony (if known): 190 nest;  
Located on the north island

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
Forster's terns		~235 pairs	
Elegant terns		~100 pairs	
Least terns		0 for 2002	
Black skimmers		386 pairs	

Prey Base (describe general type and distance from colony): Anchovies, topsmelt, centrarchids

State or Federal listed fish species potential prey? Yes or ☒ No

Species: \_\_\_\_\_

State or Federal listed wildlife/plants species associated with site: California least terns,  
Western Snowy plover, Belding's Savannah sparrow (state listed endangered)

Management issues: Conflict between habitat needs of above species

### Predators:

Avian (species; known occupancy/use of site): Occasionally gulls, Peregrine falcon, Kestrel,  
Red-tailed hawk

Mammalian (species; known occupancy/access to site): Occasionally a coyote, rarely red fox

Disturbance (i.e. livestock, human, etc.): Overflight of helicopters, researchers.

Comments: \_\_\_\_\_

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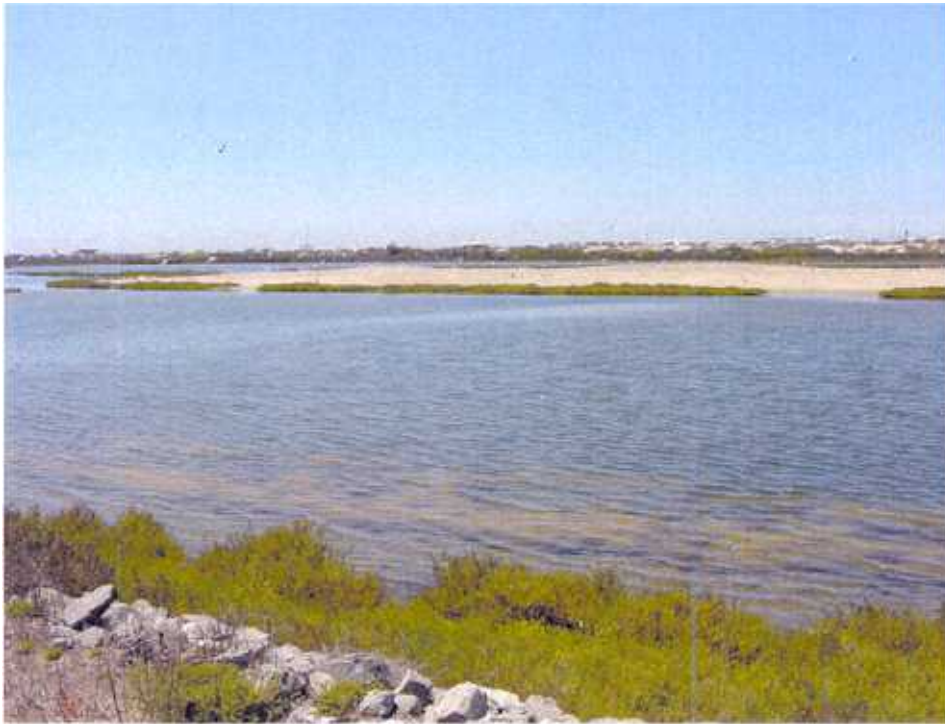
## Site Management

Management History (describe): Creation of two islands and opening tide gates

Current Management (describe): Remove vegetation each spring to provide tern nesting  
habitat, monitor all tern colonies.

Management Potential (describe): Caspian terns currently use the two islands for nesting (north island predominately used). The California Department of Fish and Game recently acquired ownership of the land between the Bolsa Chica Ecological Reserve and the bluffs to the east. No management direction has been determined to date. However, plans could include the construction of more islands within the impounded areas thereby increasing available nesting habitat. Nesting habitat may be somewhat limited in the area. The California Department of Fish and Game would be the main player.

Comments: The state plans on breaching a coastal access under the Pacific Hwy for tidal influence.



South end of the north island.



North end of the north island.



**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 22, 2002 Observer(s): J. Dillon, B. Collins

Site Name: South San Diego Saltworks, San Diego County, California

Ownership: Department of Interior, U.S. Fish and Wildlife Service

Location:

- Nearest City/Town: Imperial Beach, California
- Bay/Estuary/Waterbody: San Diego Bay
- Coordinates: Latitude N 32° 35' 33" Longitude W 117° 06' 18"
- Township, Range, Section: T18S R2W Portions of Sections 16, 17, 18, and 20
- UTM Coordinates: Northing: 3606117.8 Easting: 490146.2 Zone: 11

Size:

Total area of island or site: 437 ha (1,080 a)

Area of current/historical suitable habitat: ~ 4 ha (10 a)

Area of potential habitat: ~ 4 ha (10 a)

Distance from East Sand Island: 1,629 km (1,012 mi)

Aerial photo obtained? Y or N Date/Source of Aerial Photo: Sweetwater NWR (B&W)

\*\*\*\*\*

**Site Description**

Type of site: Island Peninsula Lakeshore Rooftop Other Saltwork levees

Natural or Manmade? Site Photographs? Y or N Number Taken: 5

Structures present (i.e. roads, buildings, power lines, piers, etc.)? Roads on levees and water transfer structures.

Vegetative communities (i.e. forb, grass, shrub, tree): some scattered shrubs

Soil substrate (i.e. sand, gravel, silt, cobble, etc.): silt

Site stability: Stable

Topography and Site profile: Levees rise 4-5 feet above water level; some small islands 1-2 feet above water level.

Comments: \_\_\_\_\_

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony (if known): 379 nests in 2002, between ponds 12 & 13 and 14 & 13, 350 nests in 2001.

### Colonial Nesting Waterbirds:

Species	Years of Occupancy	Colony Size	Distance from Caspian Terns
Forster's Tern	4+	390+ nest	No birds are crowded by lack of space
Gull-billed Tern	4+	39+ nest	
Elegant Tern	4+	37-100 nest	
Snowy Plover	3	3 nest	
Least Tern	4+	39 nest	
Black Skimmer	4+	443+ nest	
Royal Tern	4+	1-3 nest	

Prey Base (describe general type and distance from colony): Northern anchovy, Pacific sardine, topsmelt.

State or Federal listed fish species potential prey? Yes or ☒ No  
Species: \_\_\_\_\_

State or Federal listed wildlife/plants species associated with site: Western snowy plover, Least tern

Management issues: Nesting near other colonial birds

### Predators:

Avian (species; known occupancy/use of site): Western gull, peregrine falcon

Mammalian: (species; known occupancy/access to site): Coyote and dogs

Disturbance (i.e. livestock, human, etc.): Twice weekly patrol of perimeter road by Refuge staff

Comments: \_\_\_\_\_  
\*\*\*\*\*

## Site Management

Management History (describe): Saltworks; Site protection, predator control.

Current Management (describe): Site protection, predator control, colonial nesting bird nest site enhancement (adding sand as a nesting base).

Management Potential (describe): This site is currently used by Caspian terns as a nesting site. The area is currently under-utilized by colonial nesting species. More Caspian terns could nest here if so inclined. The NWR is considering creating several islands in the ponds for colonial nesting species. These islands should provide some protection from mammalian predators. Prey base does not seem to be a problem. Predators seem to be the main issue at this site.



**Portion of levee used as a maintenance road. Birds nesting along left edge.**



**Portion of levee not used as a road. Birds nest all across the levee.**

**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: March 29 and June 19, 2002 Observer(s): Dave Shuford, David Van Baren

Site Name: Meiss Lake, Butte Valley Wildlife Area, Siskiyou County, California

Ownership: California Department of Fish and Game

Location:

- Nearest City/Town: Macdoel, CA
- Bay/Estuary/Waterbody: Meiss Lake is a moderate-sized terminal lake.
- Coordinates: Latitude N 41° 51' Longitude W 122° 3.7'
- UTM Coordinates: Northings: 4633558.0 Eastings: 578861.4 Zone: 10

Size:

Total area of island or site: The number and size of islands vary considerably with water level.

Area of current/historical suitable habitat: Difficult to estimate

Area of potential habitat: Difficult to estimate

Distance from East Sand Island: ~514 km (~319 mi)

Aerial photo obtained? Y or ☒ N Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

Type of site: ☒ Island(s) ☐ Peninsula ☐ Lakeshore ☐ Rooftop ☐ Other

Natural or Manmade? Meiss Lake is a natural lake, though the size of the lake was reduced considerably by diking in the 1940s. About 50 artificial islands have been created (and periodically rebuilt) in the lake, though six large natural islands hold most colonies of breeding waterbirds.

Site Photographs? Y or ☒ N Number Taken: \_\_\_\_\_

Structures present (i.e. roads, buildings, power lines, piers, etc.)? None

Vegetative communities (i.e. forb, grass, shrub, tree): Nesting islands are sparsely to moderately vegetated with annual forbs and grasses.

Soil substrate (i.e. sand, gravel, silt, cobble, etc.): The substrate is predominately sand and silt.

Site stability: Extensive suitable nesting habitat is available except in very dry years in which falling water levels connect islands to the mainland.

Topography and Site profile: Nesting islands are low-lying and typically rise only 1-2 m above lake level.

Comments: \_\_\_\_\_

\_\_\_\_\_

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony (if known): Caspian terns typically nest on only one of the multiple islands occupied by nesting gulls. From 1997-2002, the tern colony ranged from 0-27 pairs (0 in drought year of 2002). No information is available on reproductive success of the colony.

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
American white pelican	1999-2000 only	12-15 pairs	different island
Double-crested cormorant	1997-2000	18-124 pairs	different island
Ring-billed gull	most years	450-3500 pairs	close proximity
California gull	most years	300-3000 pairs	close proximity
Forster's tern	most years	~100 pairs	different islands

Prey Base (describe general type and distance from colony): Tui chub is the only species of fish in the alkaline, shallow, and murky waters of Meiss Lake (K. Novick pers. comm.), perhaps the reason that the Caspian tern colony at this site has always been small. A number of other potential prey species occur elsewhere in the Upper Klamath Basin, but it is unclear if the terns are able to exploit them. Tui chub, blue chub, flathead minnow, green sunfish, and Sacramento perch are available about 26 km (16 mi) to the northeast at Lower Klamath NWR (D. Mauser pers. comm.).

State or Federal listed fish species potential prey? Yes or **No**

State or Federal listed wildlife/plants species associated with site: Columbia yellowcrest is a sensitive plant species that occurs on the shore of Meiss Lake, but would not be an issue with respect to island creation or other tern habitat enhancement

### Predators:

Avian (species; known occupancy/use of site): Great horned owl, golden eagle, peregrine falcon, prairie falcon, ring-billed gull, California gull.

Mammalian (species; known occupancy/access to site): Coyotes are potential predators in dry years when nesting islands are connected to the mainland or remain separated from shore by only a narrow expanse of shallow water. Skunks, raccoons, river otter, and long-tailed weasel are other potential predators.

Disturbance (i.e. livestock, human, etc.): Human disturbance is minimal as the islands are off limits to the general public.

\*\*\*\*\*

### Site Management

Management History: Historically, Meiss Lake was a terminal lake that expanded to cover about 4040 ha in wet years. The lake was part of a ranch from the 1880s until the property became a state wildlife area in 1981. Reclamation of the lake began in the 1940s, and flood control efforts in the mid-1960s allowed pumping of the lake in the spring to the Klamath River, which likely reduced its suitability for nesting gulls and terns.

Current Management: Meiss Lake is currently managed as part of a state wildlife area, but being a terminal lake it is not possible to regulate its level.

Management Potential: Limited potential. Except during periodic droughts, the terns have more than enough suitable nesting habitat. Food resources may be limited by the murky water of the lake and the distance to additional foraging sites.



Aerial photograph of gull and Caspian tern nesting islands at Meiss Lake, Butte Valley Wildlife Area. In years with low water levels, as in photo, islands may be connected to the mainland, allowing access by ground predators such as coyotes.

**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: June 1 and Sept 17, 2002 (plus multiple prior visits) Observer(s): Dave Shuford

Site Name: Lower Klamath National Wildlife Refuge, Siskiyou County, California

Ownership: U.S. Fish and Wildlife Service (Klamath Basin NWR Complex)

Location:

- Nearest City/Town: Worden and Merrill, OR, and Dorris, CA (nearest small towns)
- Bay/Estuary/Waterbody: Managed wetlands in former Lower Klamath Lake
- Coordinates: Latitude N 41° 58.4' Longitude W 121° 47.5'
- UTM Coordinates: Northing: 4646791 Easting: 600814.9 Zone: 10

Size:

Total area of island or site: Lower Klamath NWR currently has 8,907 ha of wetlands; 4,858 to 6,478 ha are seasonally flooded marshes and 2,024 to 3,644 ha are permanently flooded marshes (USBR 1998).

Area of current/historical suitable habitat: No information on historical nesting islands.

Area of potential habitat: Difficult to estimate.

Distance from East Sand Island: 507 km (315 mi)

Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

\*\*\*\*\*

**Site Description**

Type of site: Island Peninsula Lakeshore Rooftop Other \_\_\_\_\_

Natural or Manmade?

Site Photographs? Y or (N) Number Taken: \_\_\_\_\_

Structures present (i.e. roads, buildings, power lines, piers, etc.)? The north portion of the refuge is traversed by Stateline Highway (Hwy 161) along which there are some power lines and buildings. Most of the refuge lacks development except for gravel roads and water control structures.

Vegetative communities (i.e. forb, grass, shrub, tree): Primarily hardstem bulrush and cattails

Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Historic nesting habitat consisted of tule-mat islands with some silt.

Site stability: Currently large permanent ponds have water through the summer though shifting water priorities make management uncertain.

Topography and Site profile: The portions of tule-mat islands used historically by nesting terns were low-lying and flat.

Comments: Historically, Lower Klamath Lake hosted breeding Caspian terns (on the Oregon portion of the lake where they nested on tule-mat islands). From at least the early 1950s to mid-1970s, Caspian Terns nested in managed wetlands of Lower Klamath NWR (CA) also on tule-mat islands (with pelicans and cormorants). Caspian terns have not bred at this refuge since the mid-1970s. A federal Solicitor's Opinion in 1995 ruled that the Klamath Project's priorities are now endangered species (lakes and rivers), tribal trust (lakes and rivers), agriculture, and refuges. Because of a reduction in water availability for the Refuge wetlands, severe impacts are predicted for Lower Klamath NWR, particularly in summer and fall (USBR 1998, D. Mauser pers. comm.).



## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony (if known): About 15-30 pairs of Caspian terns nested at Lower Klamath NWR from at least 1955 to 1976; limited information is known about reproductive success of this colony.

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
American white pelican	almost annually	300-500 pairs	no active tern colony (see above)
Double-crested cormorant	almost annually	300-1000 pairs	
Ring-billed gull	almost annually	80-200 pairs	
California gull	almost annually	50-300 pairs	

Prey Base (describe general type and distance from colony): The main species of fish at Lower Klamath NWR likely to be prey of Caspian terns are flathead minnow (most numerous), tui chub, and blue chub (D. Mauser pers. comm.).

State or Federal listed fish species potential prey? Yes or ☒ No

State or Federal listed wildlife/plants species associated with site: None pertinent to Caspian tern habitat restoration.

### Predators:

Avian (species; known occupancy/use of site): Black-crowned night-heron, bald eagle, peregrine falcon, prairie falcon, ring-billed gull, California gull, barn owl, great horned owl

Mammalian: (species; known occupancy/access to site) Coyote, raccoon, skunk

Disturbance (i.e. livestock, human, etc.): Human use of the area varies seasonally, but during the tern breeding season it is light and confined mainly to the levee roads of the tour loop.

\*\*\*\*\*

## Site Management

Management History: Before 1900, Lower Klamath Lake consisted of about 22,267 ha of marsh and 12,146 ha of open water. Draining greatly reduced the size of the wetlands, and a portion of the area was protected in 1908 as Lower Klamath NWR.

Current Management: The refuge's wetlands currently consist of a mix of seasonally and permanently flooded marshes (USBR 1998). Since the early to mid-1980s, seasonal wetlands in summer have been increased by about 800 ha (10-20%), while the extent of farm fields on the refuge has been reduced from about 3,200 to 1,600 ha (D. Mauser pers. comm.). Managing for early successional marshes is done by rotating fields between farming and marshes.

Management Potential: The best potential habitat is probably on Sheepy Lake because this site provides deep water, isolation from disturbance, and the presence of other colonial breeders (pelicans, cormorants, and gulls). If adequate water is available, the potential for creating suitable nesting islands is good; changing water priorities, though, may limit potential foraging and nesting habitat in the area.

**CASPIAN TERN SITE FEASIBILITY ASSESSMENT**  
**FIELD FORM**

Date: April 28 and September 17, 2002 (plus multiple prior visits) Observer(s): Dave Shuford

Site Name: Tule Lake National Wildlife Refuge, Siskiyou and Modoc counties, California  
Ownership: U.S. Fish and Wildlife Service (Klamath Basin NWR Complex)

Location:

- Nearest City/Town: Tulelake, CA (nearest small town); Klamath Falls, OR (nearest large town)
- Bay/Estuary/Waterbody: Managed wetlands of wildlife refuge
- Coordinates: Latitude N 41°50.8' Longitude W 121°27.3'
- UTM Coordinates: Northing: 4634283.5 Easting: 628670.4 Zone: 10

Size:

Total area of island or site: Difficult to estimate  
Area of current/historical suitable habitat: No information on historic island size  
Area of potential habitat: The best potential habitat is either the Upper Sump (1-A) or Lower Sump (1-B) (combined about 5,263 ha)

Distance from East Sand Island: 530 km (330 mi)

Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

Type of site: (Island) Peninsula Lakeshore Rooftop Other \_\_\_\_\_

Natural or Manmade? The historic lake was drained. Tule Lake NWR was established in 1928, and wetlands are mainly in sumps maintained by agricultural return flows. Historically, Caspian Terns apparently nested on natural islands, but in the early 1950s to at least the early 1960s, they nested on islands created in the Tule Lake sumps in the 1930s; the latter subsequently were greatly reduced in size by erosion.

Site Photographs? Y or (N) Number Taken: \_\_\_\_\_

Structures present (i.e. roads, buildings, power lines, piers, etc.): Gravel roads with some power lines and water pump structures occur along the edges of the sumps.

Vegetative communities (i.e. forb, grass, shrub, tree): Currently the sumps are primarily open water with some extensive stands of hardstem bulrush and cattails.

Soil substrate: Islands in the 1950s and 1960s were composed of compacted dirt and rocks.  
Site stability: Tule Lake NWR has a dependable water supply because of the presence of the endangered Lost River and shortnose suckers. Plans to revitalize the Tule Lake wetlands may reduce the amount of open water but also present management opportunities that may benefit Caspian terns and other colonial waterbirds.

Topography and Site profile: Islands used in 1950s and 1960s were relatively low-lying.

Comments: A vast historic lake was greatly reduced by drainage. Currently wetlands are confined to two sumps on the refuge maintained by return flows from agricultural fields. Caspian terns have not bred at this refuge since the early 1960s.

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony (if known): There are few data on colony size. An estimate of 500 adults on Tule Lake in 1899 suggested a large breeding colony, but the only estimates of nests ranged from 4-80 from 1952 to 1962.

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
Double-crested cormorant	annually	~120-220 pairs	no active Caspian colony
Ring-billed gull	sporadically	<30 pairs	
Forster's tern	variable	0-200 pairs	

Prey Base (describe general type and distance from colony): The main species of fish in Tule Lake likely to be prey of Caspian terns are flathead minnow, tui chub, and blue chub (D. Mauser pers. comm.).

State or Federal listed fish species potential prey? Yes or No

Species: The Lost River sucker and shortnose sucker are present in Tule Lake but size classes suitable for terns may not be available because the suckers do not reproduce in Tule Lake.

State or Federal listed wildlife/plants species associated with site: None pertinent to Caspian tern habitat restoration.

Management issues: \_\_\_\_\_

### Predators:

Avian (species; known occupancy/use of site): Black-crowned night-heron, bald eagle, peregrine falcon, prairie falcon, ring-billed gull, California gull, barn owl, great horned owl.

Mammalian (species; known occupancy/access to site): Coyote, raccoon, skunk.

Disturbance (i.e. livestock, human, etc.): Human use of the area varies seasonally but during the tern breeding season is light and confined mainly to the levee roads of the tour loop.

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## Site Management

Management History: Before 1900, Tule Lake fluctuated in size from about 22,267 to 44,534 ha between extremes of dry and wet cycles. Draining greatly reduced the size of the wetlands, and a portion of the area was protected in 1928 as Tule Lake NWR.

Current Management: Currently, Tule Lake NWR consists of about 6,883 ha of croplands, 259 ha of experimental wetlands, and 5,263 ha of return-flow sumps (USBR 1998). The sumps are primarily open water dominated by submergent marsh plants and periodic and extensive blooms of filamentous algae; smaller areas consist of tall stands of tules and cattails. One island in sump 1-B hosts nesting cormorants and (sporadically) gulls.

Management Potential: Potential for creating suitable nesting islands is good; changing water priorities, though, may limit potential foraging habitat in the area. The best potential habitat is either the Upper Sump (1-A) or Lower Sump (1-B) because of the relatively deep water, large size of these water bodies (enabling creation of isolated islands), and presence of other colonial breeders (cormorants and gulls).

**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: May 30, 2002

Observer(s): John Beckstrand, Dani Thomson (multiple visits  
by Dave Shuford since 1994)

Site Name: Clear Lake National Wildlife Refuge, Modoc County, California

Ownership: U.S. Fish and Wildlife Service (Klamath Basin NWR Complex)

**Location:**

- Nearest City/Town: Newell, CA (nearest small town); Klamath Falls, OR (nearest large town)

Bay/Estuary/Waterbody: Clear Lake is an irrigation reservoir.

Coordinates: Latitude N 41° 53.5' Longitude W 121° 8.4'

UTM Coordinates: Northing: 4638508 Easting: 654878.1 Zone: 10

**Size:**

Total area of island or site: The extent of island habitat varies greatly depending on water level; the reservoir at capacity covers ~9623 ha. Caspian terns are not limited except during periods of drought when islands are connected to the mainland.

Area of current/historical suitable habitat: Difficult to estimate

Area of potential habitat: Difficult to estimate

Distance from East Sand Island: 536 km (333 mi)

Aerial photo obtained? Y or ☒ N Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

Type of site: ☒ Island(s) ☐ Peninsula ☐ Lakeshore ☐ Rooftop ☐ Other \_\_\_\_\_

Natural or ☒ Manmade? The original natural water body and marsh was greatly altered by damming of its outflow to form an irrigation reservoir; islands are exposed or inundated by changes in water levels.

Site Photographs? Y or ☒ N Number Taken: \_\_\_\_\_

Structures present (i.e. roads, buildings, power lines, piers, etc.)? None except a fairly large water control structure at the dam.

Vegetative communities (i.e. forb, grass, shrub, tree): Nesting islands vary from barren to sparsely vegetated with annual plants.

Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Island substrate where Caspian terns nest may consist entirely of sand or exposed lake bottom sediment, or these substrates may be interspersed with varying amounts of volcanic rock.

Site stability: Extensive suitable nesting habitat is available except in very dry years in which irrigation withdrawals lower water levels and connect islands to the mainland.

Topography and Site profile: Most nesting islands rise only about 2-3 m above lake level.

Comments: \_\_\_\_\_

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony: The terns nest on various islands depending on their availability as affected by lake level. From 1997-2002, colony size ranged from 0-242 pairs (0 in drought year of 2002). No information is available on reproductive success.

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
American white pelican	most years	~1000-3000 pairs	same or other island
Double-crested cormorant	most years	<150 pairs	same or other island
Great blue heron	most years	<30 pairs	same or other island
Great egret	most years	<10 pairs	same or other island
Black-crowned night-heron	most years	<10 pairs	same or other island
Ring-billed gull	most years	up to 3700 pairs	close proximity
California gull	most years	up to 1800 pairs	close proximity

Prey Base (describe general type and distance from colony): The most prevalent species of fish in Clear Lake are shortnose sucker, Sacramento perch, blue chub, tui chub, brown bullhead, and Lost River sucker. The most common species in the lake's tributaries and in shallow reservoirs above the lake are tui chub, blue chub, brown bullhead, green sunfish, and speckled dace (M. Buetner pers. comm.).

State or Federal listed fish species potential prey? Yes or No

Species: Lost River sucker and shortnose sucker. Juvenile suckers would be vulnerable to predation because they occupy shallow water along the edge of the lake; they also occur in the tributaries and small reservoirs.

State or Federal listed wildlife/plants species associated with site: None pertinent to Caspian tern restoration.

Management issues: \_\_\_\_\_

### Predators:

Avian (species; known occupancy/use of site): Bald eagle, golden eagle, prairie falcon.

Mammalian (species; known occupancy/access to site): Coyotes are potential predators in years when terns nest on islands separated from shore by a narrow expanse of shallow water.

Disturbance (i.e. livestock, human, etc.): The remoteness of the islands and this off-limits reservoir precludes most human disturbance.

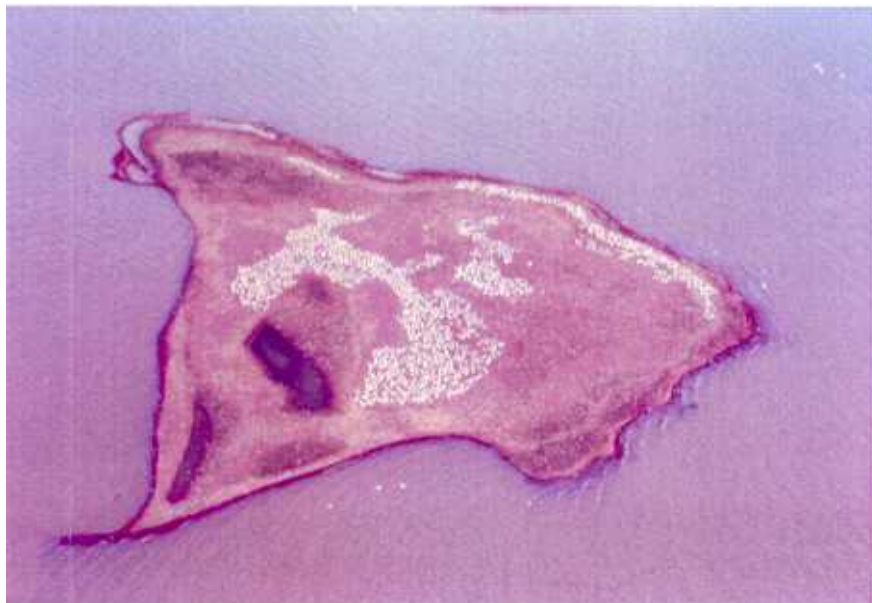
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## Site Management

Management History: Clear Lake was formerly a shallow water body and freshwater marsh but became a large irrigation reservoir when its outflow was dammed in 1910. The reservoir was incorporated in Clear Lake National Wildlife Refuge in 1911.

Current Management: The reservoir is the primary source of water for agriculture in the eastern half of the Klamath Basin with water levels regulated by the U.S. Bureau of Reclamation. The refuge is closed to the public except for limited hunting, and biologists have erected electric fences when low water levels have connected islands to the mainland.

Management Potential: Limited potential. Foraging may be limited by the murky water of the reservoir and the distance to additional foraging sites. Except during periodic droughts, the terns have more than enough suitable nesting habitat.



Aerial photograph of large island at Clear Lake NWR, occupied by nesting American white pelicans, ring-billed gulls, California gulls, and Caspian terns (photo taken May 13, 1999).



Caspian tern colony on the edge of a large island at Clear Lake NWR, also occupied by nesting gulls and pelicans (photo taken June 22, 1999).

**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: June 24, 2002

Observer(s) Dave Shuford

Site Name: Goose Lake, Modoc County, California

Ownership: State of California.

**Location:**

- Nearest City/Town: Davis Creek, CA (closest small town); Alturas, CA, and Lakeview, OR (nearest large towns)
- Bay/Estuary/Waterbody: Goose Lake (a large terminal lake)
- Coordinates: Latitude N 41°48.3' Longitude W 120°25.6'
- UTM Coordinates: Northing: 4462532.5 Easting: 723861.6 Zone: 10

**Size:**

Total area of island or site: The number and size of islands varies greatly from year to year. In many years, island habitat is extensive and that available/suitable for Caspian terns does not appear to be limiting. In other years no islands are available and terns either do not nest or nest on a peninsula.

Area of current/historical suitable habitat: Difficult to estimate

Area of potential habitat: Difficult to estimate

Distance from East Sand Island: 571 km (355 mi)

Aerial photo obtained? Y or ☒ N Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

Type of site: ☒ Island ☒ Peninsula Lakeshore Rooftop Other \_\_\_\_\_

☒ Natural or Manmade?

Site Photographs? Y or ☒ N Number Taken

Structures present (i.e. roads, buildings, power lines, piers, etc.)? Roads on west and east side of lake are far from nesting islands as are power lines and buildings.

Vegetative communities (i.e. forb, grass, shrub, tree): The lake's nesting islands are covered with low forbs and grasses with bare patches in between.

Soil substrate(i.e. sand, gravel, silt, cobble, etc) Fine sandy silt from lake bottom sediments

Site stability: The number and size of suitable islands that form along the southeast shore of Goose Lake vary considerably from year to year because of shallow water at this end of the lake and because islands that form are low-lying (high points at most 1-1.5 m above lake level).

Topography and Site profile: (see above)

Comments: Goose Lake is a natural lake, though its size is likely affected by the removal of water from inflowing streams to irrigate agricultural fields. Caspian terns in some years nest on one island, sometimes on two islands, sometimes on a peninsula, and sometimes not at all because of a lack of suitable nest sites.



## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony (if known): Caspian tern colonies typically are located at the southeast (California) end of the lake. Colony size from 1997-2002 ranged from 4-310 pairs (133 pairs in 2002); data on reproductive success are unavailable.

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
Ring-billed gull	most years	up to 1100 pairs	often immediately adjacent
California gull	most years	<100 pairs	on same or adjacent islands
Forster's tern	most years	up to 500 pairs	on same or adjacent islands
Double-crested cormorant	rarely	<40 pairs	on same or adjacent islands
American white pelican	very rarely	?	on same or adjacent islands

Prey Base (describe general type and distance from colony): Fish present in Goose Lake are Goose Lake tui chub, Goose Lake sucker, Goose Lake lamprey, Goose Lake redband trout, speckled dace, brown trout, and Pit sculpin (P. Chappell pers. comm.).

State or Federal listed fish species potential prey? Yes or **(No)**

State or Federal listed wildlife/plants species associated with site: None pertinent to Caspian tern habitat restoration.

### Predators:

Avian (species; known occupancy/use of site): Bald eagle, golden eagle, prairie falcon, ring-billed gull, California gull.

Mammalian (species; known occupancy/access to site): Coyotes are potential predators in years when terns nest on a peninsula or on islands separated from shore by shallow water.

Disturbance (i.e. livestock, human, etc.): There is probably almost no human disturbance because of the difficulty of accessing the islands.

\*\*\*\*\*

## Site Management

Management History: The surrounding lands apparently have been managed in a similar manner for decades (see below).

Current Management: Uplands to the west are managed mostly by Modoc National Forest and a few private landowners; uplands to south, east, and north are managed by private landowners for cattle grazing and hay/alfalfa production.

Management Potential: Current nesting islands are low and easily floods or get connected to the mainland. Stable and higher islands are needed. However, the potential to manage for terns at this site is probably minimal because of the difficulty of working in a very shallow lake (airboat and kayak the easiest way to get around). The shore is very mucky as the lake level drops and is very hard to traverse on foot. The best chance to create more permanent islands farther offshore would be during a brief window of opportunity in an extended drought; such efforts would likely be expensive.

## Goose Lake, California



Nesting islands stretching along the southeastern shore of Goose Lake, as viewed looking south from a bluff along Highway 395 (photo taken May 19, 1997). The number, size, and location of the islands vary greatly with small changes in water level. Islands suitable for Caspian terns are not available in some years, then the terns either do not nest or nest on peninsulas.



Caspian terns nesting with a much larger colony of ring-billed gulls on the highpoint of a large low-lying island at the southeastern end of Goose Lake (photo taken June 24, 2002).



Caspian terns nesting with ring-billed gulls on the edge of, or within, a stand of fairly tall annual plants on an island at the southeastern end of Goose Lake.



Caspian terns nesting on the edge of a stand of fairly tall annual plants on an island at the southeastern end of Goose Lake.

**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: June 27, 2002

Observer(s): Dave Shuford

Site Name: Bird Island, Big Sage Reservoir, Modoc County, California

Ownership: Probably the local irrigation district that operates the reservoir

Location:

- Nearest City/Town: Alturas, CA
- Bay/Estuary/Waterbody: Big Sage Reservoir is a large irrigation reservoir.
- Coordinates: Latitude N 41°35.9' Longitude W 120°39'
- UTM Coordinates: Northing: 4608033.5 Easting: 695842.0 Zone: 10

Size:

Total area of island or site: The size of Bird Island varies considerably with fluctuating water levels. In years in which Caspian terns nest on the island, they occupy a very small portion of the extensive nesting habitat.

Area of current/historical suitable habitat: Difficult to estimate

Area of potential habitat: Difficult to estimate

Distance from East Sand Island: 583 km (362 mi)

Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

Type of site: (Island(s)) Peninsula Lakeshore Rooftop Other \_\_\_\_\_

Natural or (Manmade) Reservoir is human created Site Photographs? (Y) or N

Structures present (i.e. roads, buildings, power lines, piers, etc.)? None

Vegetative communities (i.e. forb, grass, shrub, tree): The island is bare or sparsely vegetated with annuals, which in some places are extensive and up to 0.5 m in height; there are a few small clumps of willows.

Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Silt with lots of basaltic/volcanic rock.

Site stability: Bird Island is available in most years, except in drought conditions when connected to the mainland (as in 2002).

Topography and Site profile: Bird Island is largely low-lying but rises to about 3-4 m above lake level at its highest point.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony: From 1997-2002, colony size ranged from about 0-62 pairs (0 in drought year of 2002). When active, the colony is typically on Bird Island, the largest and most consistently available island in the reservoir. Observations since the mid-1990s indicate the terns do not nest at Big Sage Reservoir, even when there is good nesting habitat, if suitable nesting islands are available about 25-30 km to the northeast at Goose Lake. No information on reproductive success is available for the Big Sage Reservoir colony.

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
Ring-billed gull	most years	up to 3,000 pairs	often immediately adjacent
California gull	most years	<80 pairs	often immediately adjacent
Forster's tern	irregularly	<10 pairs	elsewhere on island

Prey Base (describe general type and distance from colony): Fish at Big Sage Reservoir are tui chub, channel catfish, largemouth bass, brown bullhead, Sacramento sucker, and black crappie (P. Chappell pers. comm.).

State or Federal listed fish species potential prey? Yes or **(No)**

Species: \_\_\_\_\_

State or Federal listed wildlife/plants species associated with site: None

Management issues: \_\_\_\_\_

### Predators:

Avian (species; known occupancy/use of site): Bald eagle, golden eagle, prairie falcon, and ring-billed and California gulls.

Mammalian (species; known occupancy/access to site): Coyotes are likely predators in the rare years in which Bird Island is connected to the mainland (as in 2002).

Disturbance (i.e. livestock, human, etc.): The reservoir is used by fisherman who might cause disturbance if they were to land on the island and walk through the colony during the breeding season.

\*\*\*\*\*

## Site Management

Management History: This irrigation reservoir, created in 1921, covers about 2133 ha.

Current Management: Although within the Modoc National Forest, the reservoir continues to be managed to provide irrigation water for agricultural fields in nearby valleys. Drawing down the reservoir to meet irrigation needs in dry years may connect Bird Island to the mainland, allowing access by ground predators such as coyotes.

Management Potential: Very limited, as in most years the terns have more than enough suitable nesting habitat; they appear to prefer to nest nearby at Goose Lake, presumably because of better foraging conditions at the latter site.



## Big Sage Reservoir, California



A large colony of ring-billed gulls on Bird Island at Big Sage Reservoir, with a small Caspian tern colony visible with difficulty in the low green grassy area in the middle left of the photo (photo taken May 15, 1997).



Caspian terns nesting in an open rocky area on Bird Island at Big Sage Reservoir, in association with a large colony of ring-billed gulls (photo taken June 20, 2000).



**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: June 16, 2002

Observer(s): Dave Shuford

Site Name: Honey Lake Wildlife Area (Dakin Unit), Lassen County, California

Ownership: California Department of Fish and Game

Location:

- Nearest City/Town: Standish, CA (closest small town); Susanville, CA (nearest large town)
- Bay/Estuary/Waterbody: Hartson Reservoir or an adjacent refuge impoundment
- Coordinates: Latitude N 40°17.7' Longitude W 120°22.8'
- UTM Coordinates: Northing: 4462532.5 Easting: 723861.6 Zone: 10

Size:

Total area of island or site: The number and size of nesting islands varies considerably, and additional islands were added to Hartson Reservoir in the mid-1980s; nesting habitat is limiting only in drought years.

Area of current/historical suitable habitat: Difficult to estimate

Area of potential habitat: Difficult to estimate

Distance from East Sand Island: 724 km (450 mi)

Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

\*\*\*\*\*

**Site Description**

Type of site: (Island(s)) Peninsula Lakeshore Rooftop Other \_\_\_\_\_

Natural or Manmade? **Both** Site Photographs? (Y) or N Number Taken: \_\_\_\_\_

Structures present (i.e. roads, buildings, power lines, piers, etc.)? None close to colony.

Vegetative communities (i.e. forb, grass, shrub, tree): The island occupied by nesting Caspians in 2002 had a barren perimeter (covered with water at high pond levels) and an upper portion with grasses and a few clumps of low *Juncus* spp. Most Caspian terns on the survey date were on the lower barren bench.

Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Sandy silt

Site stability: Islands are available in most years except during drought conditions.

Topography and Site profile: The island used in 2002 had about 1.5-2 m relief above the water level of the pond; islands used in other years have a similar low profile.

Comments: \_\_\_\_\_  
\_\_\_\_\_

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony (if known): From 1997-2002, colony size ranged from about 46-152 pairs (46 pairs in 2002). In many years the colony is on one or more islands in Hartson Reservoir (a natural lake separated from saline Honey Lake by sand dunes), but from at least 2000-2002 the terns nested on islands in a diked pond (5A) immediately to the east. No information on reproductive success of this colony is available.

### Colonial Nesting Waterbirds:

Species	Years of Occupancy	Colony Size	Distance from Caspian Terns
California gull	most years	up to 1900 pairs	often immediately adjacent
Ring-billed gull	most years	up to 2500 pairs	often immediately adjacent
Double-crested cormorant	rarely	20-50 pairs	on same or adjacent islands
American white pelican	very rarely	200-700 pairs	on same or adjacent islands
Snowy egret	most years	?	on a nearby island
Black-crowned night-heron	most years	?	on a nearby island

Prey Base (describe general type and distance from colony): The primary fish species likely to be available to Caspian terns in the Honey Lake vicinity is tui chub, though other benthic feeders, such as speckled dace, mountain sucker, channel catfish, and brown bullhead, may be available in shallow or receding waters.

State or Federal listed fish species potential prey? Yes or ☒ No

State or Federal listed wildlife/plants species associated with site: None pertinent to Caspian tern habitat restoration.

### Predators:

Avian (species; known occupancy/use of site): Black-crowned night-heron, golden eagle, prairie falcon, California and ring-billed gulls, great horned owl

Mammalian (species; known occupancy/access to site): coyote, raccoon, skunk, long-tailed weasel

Disturbance (i.e. livestock, human, etc.): No livestock grazing occurs in this area. There is limited use of the area by humans in summer, and isolation of islands precludes easy human access.

\*\*\*\*\*

## Site Management

Management History: The Dakin Unit and Hartson Reservoir were formerly part of a ranching operation. Hartson was filled with river water in the winter and pumped to irrigate fields in the spring and summer; the latter may have reduced its suitability to nesting gulls and terns. Since the early 1940s the area has been managed as a state wildlife area.

Current Management: The wildlife area is managed for both game and nongame species. Efforts are made to keep water levels high enough to maintain isolation of nesting islands but in drought years this is precluded by the expense of pumping ground water. Current efforts to ensure full access to water rights may improve the future ability to maintain adequate levels in Hartson Reservoir.

Management Potential: Probably limited in food resources, as in most years the terns do not appear to be limited by the availability of suitable nesting islands.

## Honey Lake, California



Nesting islands with ring-billed gulls, California gulls, and Caspian terns in pond 5A of the Dakin Unit of Honey Lake Wildlife Area (photo taken June 16, 2002).



Caspian terns nesting on a small island in pond 5A of the Dakin Unit of Honey Lake Wildlife Area (photo taken June 18, 2000).

**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: May 25 to July 3, 2002 (5 times)

Observer(s): Justin Hite, Elizabeth O'Hara  
(Dave Shuford multiple times since 1983).

**Site Name:** Mono Lake, Mono County, California

**Ownership:** The lake is within the Mono Basin National Forest Scenic Area but ownership varies depending on whether islands were submerged prior to 1941 (owned by state of California) or if islands existed in 1941 (owned by U.S. Forest Service).

**Location:**

Nearest City/Town: Lee Vining, CA

Bay/Estuary/Water body: Mono Lake is a large hypersaline terminal lake.

Coordinates: Latitude N 38° 01.9' Longitude W 119° 02.9'

or UTM Northing: 4209615.5 Easting: 321510.1 Zone 11S

**Size:**

Total area of island or site: Twain Islet ~4.6 ha (11.4 a)

Area of current/historical suitable habitat: The amount of nesting habitat has varied extensively because of water diversions and climatic variability.

☐ Area of potential habitat: Variable

Distance from East Sand Island: 1000 km (622 mi)

Aerial photo obtained? Y or N Date/Source of Aerial Photo: \_\_\_\_\_

\*\*\*\*\*

**Site Description**

Type of site: Island (s) Peninsula Lakeshore Rooftop Other \_\_\_\_\_

Natural or Manmade? The islands are natural but have been exposed by water diversions by the Los Angeles Dept. of Water and Power. Site Photographs? Y or N Number Taken: \_\_\_\_\_

Structures present (i.e. roads, buildings, power lines, piers, etc.)? None close to colony, but terns must pass over Hwy 395 to reach foraging sites.

Vegetative communities (i.e. forb, grass, shrub, tree): Much of Twain Islet is barren with very sparse annual forbs; about 10% of the island has been colonized with greasewood and sagebrush scrub since the 1980s. Many other islands in the lake have open, barren or sparsely vegetated habitat.

Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Twain Islet, occupied by nesting Caspian terns in recent years, is a low-lying island primarily of volcanic origin. The soil is pumice silt or sand mixed extensively with volcanic rocks coated with tufa.

Site stability: Suitable nesting islands currently are available at Mono Lake every year.

Topography and Site profile: Most of the Mono Lake islets are low-lying and either of volcanic origin or of lake bottom sediments pushed up by volcanic activity. The islets so far used by nesting Caspian terns rise at most about 10 m above lake level, which has varied considerably because of water diversions and climatic variability.

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony (if known): Twain Islet, of the Negit Islets group, has been occupied by Caspian terns in recent years, but from the mid-1980s to mid-1990s the nesting terns occupied the Paoha Islets. From 2000-2002, the colony on Twain ranged from 6-11 pairs (11 pairs in 2002); there is limited information on reproductive success.

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
California gull	annually	~17,500-32,500 pairs	some within 2 m of terns
Black-crowned night-heron	annually	8-10 pairs	within 15 m

Prey Base (describe general type and distance from colony): No fish exist in hypersaline Mono Lake so the terns must travel 15-20 km to forage at freshwater reservoirs. Fish (all introduced) that occur in Mono Basin streams and reservoirs are: tui chub, brook trout, golden trout, rainbow trout, brown trout, Owens sucker, mosquitofish, threespine stickleback, and, perhaps, goldfish. Tui chub and brown trout are the most likely species to be eaten by Caspian terns (D. Sada pers. comm.)

State or Federal listed fish species potential prey? Yes or ☒ No

State or Federal listed wildlife/plants species associated with site: None

### Predators:

Avian (species; known occupancy/use of site): Black-crowned night-heron, golden eagle, peregrine falcon, prairie falcon, California gull, great horned owl.

Mammalian (species; known occupancy/access to site): Coyotes are potential predators in years when terns nest on islands separated from shore by a narrow stretch of shallow water, which is unlikely under current management guidelines.

Disturbance (i.e. livestock, human, etc.): Human disturbance is likely to be minimal because of the remoteness of the islands and because of a closure of the islands from April through August.

\*\*\*\*\*

## Site Management

Management History (describe): Water diversions of inflowing streams by the Los Angeles Dept. of Water and Power began in the 1940s. The Mono Basin National Forest Scenic Area was created in 1984. Water diversions have been restricted by a 1994 re-licensing of water rights permits such that lake levels will rise and fluctuate around a level that should protect a number of suitable nesting islands.

Current Management (describe): The nesting islands are currently closed to entry from April through August. Water diversions are regulated by licenses from the California State Water Resources Control Board.

Management Potential: Little potential. Although there is extensive nesting habitat, foraging opportunities are very limited because of the lack of fish in Mono Lake and because few freshwater reservoirs are within reasonable foraging distance of the nesting islands.



Small numbers of Caspian terns periodically nest on Twain Islet (largish flat-looking islet in upper right), one of the Negit Islets, which support the majority of the California gulls nesting at Mono Lake. The large black island is Negit Island; the expanse of white at upper right is a landbridge that connected this island to the mainland in the late 1970s and early 1980s.



Small numbers of Caspian terns periodically nest with California gulls on the Paoha Islets off the west shore of Paoha Island at Mono Lake.



**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 23, 2002 Observer(s): John Crane, Catherine Hickey, Jeff Seay, Dave Shuford

Site Name: Lemoore Naval Air Station sewage ponds, Kings County, California

Ownership: U.S. Navy

**Location:**

- Nearest City/Town: Lemoore
- Bay/Estuary/Waterbody: A set of sewage ponds for the naval air base
- Coordinates: Latitude N 36°14.8' Longitude W 119°52.7'
- UTM Coordinates: Northing: 4015534.2 Easting: 240921.72 Zone: 11

**Size:**

Total area of island or site: ~240 ha (593 a)

Area of current/historical suitable habitat: No information on historic site size

Area of potential habitat: The central nesting levee is about 0.4-0.8 km long by 5 m wide

Distance from East Sand Island: 1164 km (723 mi)

Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

Type of site: Island   Peninsula   Lakeshore   Rooftop   (Other) Internal gravel levee of a set of sewage ponds

Natural or (Manmade)

Site Photographs? Y or (N) Number Taken

Structures present: Structures present include a chain link fence around all of the ponds, a paved road on one side, and a large power line on another side.

Vegetative communities (i.e. forb, grass, shrub, tree): The nest site was bare gravel with weeds on the edge of the levee.

Soil substrate (i.e. sand, gravel, silt, cobble, etc. ): The substrate is compacted hard soil

Site stability: The site is stable as the ponds around the nesting levee are usually full.

Topography and Site profile: The levee roads are flat with sloping sides.

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony (if known): An observation of ~20 pairs of nesting Caspian terns in 1998 represents the only documentation of breeding by this species at this site. There is no information on reproductive success.

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
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Prey Base (describe general type and distance from colony): The terns forage in drainage canals where the primary fish are inland silverside, threadfin shad, Sacramento blackfish, Sacramento squawfish, mosquitofish, catfish, carp, and striped bass. Crayfish was a particularly important prey item found at Caspian tern nests at the TLDD South Evaporation Basin (R. Hansen pers. comm.).

State or Federal listed fish species potential prey? Yes or ☒ No  
Species: \_\_\_\_\_

State or Federal listed wildlife/plants species associated with site: None  
Management issues: \_\_\_\_\_

### Predators:

Avian (species; known occupancy/use of site): Black-crowned night-heron, northern harrier, peregrine falcon.

Mammalian (species; known occupancy/access to site): Coyote, raccoon, skunk, feral cat

Disturbance (i.e. livestock, human, etc.): There is very limited use of the site by naval personnel that operate the ponds and for biologists monitoring wildlife; a locked gate and the location on the naval base preclude use by the public.

\*\*\*\*\*

## Site Management

Management History: The ponds were created in 1975.

Current Management: Since their inception the ponds have been managed as sewage treatment ponds for the naval air station. Hazing of wildlife at the ponds is slated for 2003 in compliance with a State Water Resources Control Board permit because of the potential for selenium in the water. If nests are established, eggs will need to be monitored for selenium.

Management Potential: There appears to be limited potential for enhancement of this site for Caspian terns given the need to haze birds to reduce the potential risk of their contamination by selenium. The single prior nesting record for Caspian terns suggests that foraging habitat in the vicinity of this site may be marginal.

**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 23, 2002 Observer(s): Catherine Hickey, Jeff Seay, Dave Shuford

Site Name: Westlake Farms North Evaporation Basin, Kings County, California  
Ownership: Westlake Farms (private)

Location:

- Nearest City/Town: Stratford, CA
- Bay/Estuary/Waterbody: The site is a set of agricultural evaporation ponds used to dispose of salt-laden drain water.  
Coordinates: Latitude N 36°13.9' Longitude W 119°49.3'  
UTM Coordinates: Northing: 4013552.2 Easting: 245361 Zone: 11

Size:

Total area of island or site: The evaporation ponds cover an area of ~104 ha; island nesting sites are unavailable in most years.  
Area of current historical suitable habitat: A nesting island, when available, is ~160 sq. m (.04 a)  
Area of potential habitat: Potential habitat would be much greater if islands were created in the ponds.

Distance from East Sand Island: 1167 km (725 mi)

Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

Type of site: Island Peninsula Lakeshore Rooftop Other \_\_\_\_\_

Natural or Manmade? Site Photographs? Y or (N) Number Taken: \_\_\_\_\_

Structures present (i.e. roads, buildings, power lines, piers, etc.): There are power lines along paved roads on three sides of the ponds.

Vegetative communities (i.e. forb, grass, shrub, tree): There is no vegetation on the nesting islands or on the edge of the ponds.

Soil substrate (i.e. sand, gravel, silt, cobble, etc.): The substrate of the islands is alkaline soil/silt.

Site stability: Island availability varies greatly, and they usually are unavailable. Currently there is generally more water in the ponds than in the past because another farmer closed his evaporation ponds and now puts his drain water in these ponds. Pond levels may also fluctuate with the acreage of fields that are planted depending on commodity prices and farm subsidies.

Topography and Site profile: The islands rise <0.3 m above the water level.

Comments: Unlike at many other evaporation ponds in the Tulare Basin, the selenium levels at Westlake North are low and not of concern with respect to reproductive success of the terns.

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony: (if known) Caspian terns are known to have bred at this site only in 1993 (10 nests) and 1994 (8 nests), but nesting was unsuccessful (J. Seay pers. comm.).

Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
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Prey Base (describe general type and distance from colony): The terns forage in drainage canals where the primary fish are inland silverside, threadfin shad, Sacramento blackfish, Sacramento squawfish, mosquitofish, catfish, carp, and striped bass. Crayfish was a particularly important prey item found at Caspian tern nests at the TLDD South Evaporation Basin (R. Hansen pers. comm.).

State or Federal listed fish species potential prey? Yes or ☒ No

State or Federal listed wildlife/plants species associated with site: None  
Management issues: \_\_\_\_\_

Predators:

Avian (species; known occupancy/use of site): Black-crowned night-heron, northern harrier, peregrine falcon.

Mammalian (species; known occupancy/access to site): Coyote, raccoon, skunk, feral cat.

Disturbance (i.e. livestock, human, etc.): Humans have been observed shooting at these evaporation ponds in spring (J. Seay pers. comm.).

\*\*\*\*\*

## Site Management

Management History: These evaporation ponds were established in 1984 to dispose of salt-laden drain water from nearby agricultural fields.

Current Management: The ponds are currently managed for the same purpose, but in about 1996 additional drain water was added from a second operator, which tends to keep the water level higher than in the past.

Management Potential: Probably very limited, as management for agricultural purposes may conflict with maintaining suitable nesting islands. The small number of terns that have nested at these ponds suggests that nearby foraging habitat may also be limiting.

**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: June 29, 1998

Observer(s): Dave Shuford

Site Name: Tulare lakebed ~15 km east of Kettleman City, Kings County, California

Ownership: Private agricultural land

**Location:**

- Nearest City/Town: Kettleman City, California
- Bay/Estuary/Waterbody: In 1998, terns were nesting within a vast area where floodwaters were stored on agricultural lands.
- Coordinates: Latitude N 36° Longitude W 119°47.1'
- UTM Coordinates: Northing: 3987532 Easting: 249114.08 Zone: 11

**Size:**

Total area of island or site: The nesting island in 1998 was a portion of a broken levee (~ 3 m x 30 m), narrowly connected from the land, within an area of about 120 square kilometers of shallowly flooded agricultural land.

Area of current/historical suitable habitat: Typically there is no suitable tern nesting habitat in this area; habitat in 1998 was created by flooding of an extensive area of agricultural land after an El Niño winter.

Area of potential habitat: Insular nesting sites are usually very limited even in the rare years when there is extensive flooded habitat.

Distance from East Sand Island: 1193 km (741 mi)

Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

Type of site: (Island) Peninsula Lakeshore Rooftop Other \_\_\_\_\_

Natural or (Manmade)

Site Photographs? Y or (N)

Structures present (i.e. roads, buildings, power lines, piers, etc.): None in the vicinity of the tern island

Vegetative communities (i.e. forb, grass, shrub, tree): The island was mostly barren with a few scattered dried weeds.

Soil substrate (i.e. sand, gravel, silt, cobble, etc.): The substrate of the levee island was mud clods of alkaline soil/silt.

Site stability: The site is extremely unstable in terms of tern nesting habitat. In most years, the area would be planted with agricultural crops or left fallow; tern habitat is created only in extremely wet years, and even under such conditions the particular area and extent of flooding can vary enormously.

Topography and Site profile: The levee island was mostly flat with sloping sides.

Comments: \_\_\_\_\_

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony: The nesting site in 1998 was about 15 km east of Kettleman City and held about 20 pairs of terns; of 14 eggs seen, at least four were preyed on, presumably by coyotes.

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
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Prey Base (describe general type and distance from colony): The terns forage in drainage canals (or also possible in the Hacienda and South Wilbur flood basins), where the primary fish are inland silverside, threadfin shad, Sacramento blackfish, Sacramento squawfish, mosquitofish, catfish, carp, and striped bass. Crayfish was a particularly important prey item found at Caspian tern nests at the TLDD South Evaporation Basin (R. Hansen pers. comm.).

State or Federal listed fish species potential prey? Yes or ☒ No

Species: \_\_\_\_\_

State or Federal listed wildlife/plants species associated with site: None

Management issues: \_\_\_\_\_

### Predators:

Avian (species; known occupancy/use of site): Black-crowned night-heron, northern harrier, peregrine falcon.

Mammalian (species; known occupancy/access to site): Coyote, raccoon, skunk, feral cat.

Disturbance (i.e. livestock, human, etc.): There was unlikely much disturbance at this site located in open water about 1.5 km from the nearest dirt farm road.

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## Site Management

Management History: Historically, this area was part of the lakebed of Tulare Lake, at one time the largest freshwater lake and marsh system west of the Mississippi River. The lake has been drained, and for many decades this area has been farmed.

Current Management: This area is currently managed almost exclusively for agricultural purposes. In extremely wet years, the amount of runoff may exceed the capacity of upstream reservoirs in which case creeks may overflow their banks or excess water may be purposely shunted to particularly areas of farmland to be stored.

Management Potential: Currently there is very limited potential for enhancing tern nesting habitat. Low crop yields on extensive areas of alkaline soil, though, may make it possible for wildlife interests in the future to purchase these marginal lands and their water rights for use in creating wetland habitat with the potential in part to be managed for nesting terns.



**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 23, 2002

Observer(s): Catherine Hickey, Jeff Seay, Dave Shuford

Site Name: Westlake Farms mitigation wetland (Section 3), Kings County, California

Ownership: Westlake Farms (private)

**Location:**

- Nearest City/Town: Kettleman City, CA
- Bay/Estuary/Waterbody: A set of diked freshwater ponds immediately adjacent to the northwest end of the Westlake Farms South Evaporation Basin.
- Coordinates: Latitude N 35°57.5' Longitude W 119°54.1'
- UTM Coordinates: Northing: 3954140.2 Easting: 238484.89 Zone: 10

1

Total area of island or site: The total area of the ponds is 96 ha, though usually about 36 ha are flooded.

Area of current/historical suitable habitat: Terns nested on an island about 6m x 18 m in size.

Area of potential habitat: There are about 25 islands of the same size.

Distance from East Sand Island: 1194km (742 mi)

Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

Type of site: (Island) Peninsula Lakeshore Rooftop Other \_\_\_\_\_

Natural or (Manmade?)

Site Photographs? Y or (N)

Structures present (i.e. roads, buildings, power lines, piers, etc.)? None

Vegetative communities (i.e. forb, grass, shrub, tree): There are dirt roads on the perimeter of the ponds, a low electric fence around the ponds, and very distant power lines.

Soil substrate (i.e. sand, gravel, silt, cobble, etc. The soil is alkali silt.

Site stability: The ponds typically have water every year though water levels and island availability vary.

Topography and Site profile: The islands rise about 0.5 m above the water.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony: Single nests were found in 1994 and 1996 neither of which were successful (J. Seay pers. comm.).

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
American avocet	annually		
Black-necked stilt	annually		

Prey Base (describe general type and distance from colony): The terns forage in drainage canals (or also possible in the Hacienda and South Wilbur flood basins), where the primary fish are inland silverside, threadfin shad, Sacramento blackfish, Sacramento squawfish, mosquitofish, catfish, carp, and striped bass. Crayfish was a particularly important prey item found at Caspian tern nests at the TLDD South Evaporation Basin (R. Hansen pers. comm.).

State or Federal listed fish species potential prey? Yes or **(No)**

Species: \_\_\_\_\_

State or Federal listed wildlife/plants species associated with site: None

Management issues: \_\_\_\_\_

### Predators:

Avian (species; known occupancy/use of site): Black-crowned night-heron, northern harrier, peregrine falcon.

Mammalian (species; known occupancy/access to site): Coyote, raccoon, skunk, feral cat.

Disturbance (i.e. livestock, human, etc.): These fairly remote ponds on private land get little human disturbance.

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## Site Management

Management History: These ponds were developed in 1993 (islands created in 1994) to mitigate for the potential impact of selenium on nesting recurvirostrids in adjacent agricultural evaporation ponds and have held water every year since.

Current Management: The ponds continue to be managed as alternative habitat for nesting stilts and avocets to compensate for potential impacts of selenium on these species at adjacent evaporation ponds.

Management Potential: Probably very limited, as the small number of terns that have nested and their lack of reproductive success suggest that nearby foraging habitat may be limiting or predator pressure may be too intense; the low electric fence has not been successful in deterring predators.

**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 23, 2002 Observer(s): Catherine Hickey, Jeff Seay, Dave Shuford

Site Name: Westlake Farms South Evaporation Basin, Kings County, California

Ownership: Westlake Farms (private)

**Location:**

- Nearest City/Town: Kettleman City, CA
- Bay/Estuary/Waterbody: The site is a set of agricultural evaporation ponds used to dispose of salt-laden drain water.
- Coordinates: Latitude N 35°56.8' Longitude W 119°52.7'
- UTM Coordinates: Northing: 3982246.5 Easting: 239933.88 Zone: 11

**Size:**

Total area of island of site: The evaporation ponds cover an area of ~296 ha (731 a)  
Area of current historical suitable habitat: Same as above since creation in 1984.  
Area of potential habitat: The number of cells and the depth to which they are flooded varies with climatic fluctuations and the acreage of nearby fields that are being irrigated (e.g., only about 40 ha flooded in 2002).

Distance from East Sand Island: 1196 km (743 mi)

Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

Type of site: Island Peninsula Lakeshore Rooftop (Other) Internal levee between cells of a set of six evaporation ponds.

Natural or (Manmade) Reservoir is human created Site Photographs? Y or (N)

Structures present (i.e. roads, buildings, power lines, piers, etc.)? No structures are present within the vicinity of the ponds, which have dirt levees around them.

Vegetative communities (i.e. forb, grass, shrub, tree): There is essentially no vegetation on the pond edges or levees.

Soil substrate (i.e. sand, gravel, silt, cobble, etc.): The substrate of the pond bottoms, edges, and levees is alkaline soil/silt.

Site stability: Pond levels fluctuate with the acreage of fields that are planted depending on commodity prices and farm subsidies. Although the extent of levees on which the terns potentially could nest remains stable, their suitability as nest sites appears to change with the number of pond cells that are flooded, as the terns favor internal levees surrounded on both sides by ponds with water.

Topography and Site profile: Levee tops are flat with sloping sides.

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony: Caspian Terns are known to have nested at this site only in 1998 when they established three nests, none of which were successful (J. Seay pers. comm.).

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
American avocet	annually		
Black-necked stilt	annually		

Prey Base (describe general type and distance from colony): The terns forage in drainage canals (or also possible in the Hacienda and South Wilbur flood basins), where the primary fish are inland silverside, threadfin shad, Sacramento blackfish, Sacramento squawfish, mosquitofish, catfish, carp, and striped bass. Crayfish was a particularly important prey item found at Caspian tern nests at the TLDD South Evaporation Basin (R. Hansen pers. comm.).

State or Federal listed fish species potential prey? Yes or **(No)**

Species: \_\_\_\_\_

State or Federal listed wildlife/plants species associated with site: None

Management issues: \_\_\_\_\_

### Predators:

Avian (species; known occupancy/use of site) : Black-crowned night-heron, northern harrier, peregrine falcon.

Mammalian (species; known occupancy/access to site): Coyote, raccoon, skunk, feral cat.

Disturbance (i.e. livestock, human, etc.): These fairly remote ponds on private land get little human disturbance.

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## Site Management

Management History: These ponds were established in 1984 for the purpose of disposing of salt-laden drain water from nearby agricultural fields.

Current Management: The ponds are currently managed for the same purpose, but nesting is discouraged because of concerns about the effect of selenium on breeding birds. Ponds are filled in such a manner that central levees no longer have water on both sides, which reduce their suitability for nesting terns.

Management Potential: Probably very limited, as management for agricultural purposes may conflict with maintaining suitable nesting habitat; a lack of insular nesting sites would make it difficult to maintain a long-term colony. The small number of terns that have nested at these ponds suggests that nearby foraging habitat may also be limiting.

**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: May 16, 2002

Observer(s): Rob Hansen, Dave Shuford

Site Name: South Wilbur Flood Area, Kings County, California

Ownership: Tulare Lake Drainage District (private)

**Location**

Nearest City/Town: Alpaugh, Tulare County, California

Bay/Estuary/Waterbody: A large basin used to store excess water, mostly in very wet years, for later use in irrigating agricultural fields.

Coordinates: Latitude N 35°51.2' Longitude W 119°40.7'

UTM Coordinates: Northings: 3970636 Eastings: 257672.25 Zone: 11

**Size:**

Total area of island or site: In 1999, terns were nesting on a long, broken levee island narrowly separated from the mainland

Area of current/historical suitable habitat: The amount of flooded habitat varies greatly among years

Area of potential habitat: Potential nesting habitat is usually very limited even in the rare years when there is extensive flooded habitat.

Distance from East Sand Island: 1211 km (752 mi)

Aerial photo obtained? Y or N Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

Type of site: Island Peninsula Lakeshore Rooftop Other \_\_\_\_\_

Natural or Manmade? Site Photographs? Y or N Number Taken: \_\_\_\_\_

Structures present (i.e. roads, buildings, power lines, piers, etc.)? Some power lines and large water control structures occur in the vicinity of the flood basin.

Vegetative communities (i.e. forb, grass, shrub, tree): The levee island used in 1999 was largely devoid of vegetation.

Soil substrate(i.e. sand, gravel, silt, cobble, etc.): The substrate of the levee island was alkaline soil/silt.

Site stability: Although the amount of habitat can vary enormously between wet and dry periods, insular nesting sites are usually very limited even in the rare years when there is extensive flooded habitat. This site is flooded more frequently than the nearby Hacienda Flood Basin.

Topography and Site profile: Levee tops are flat with sloping sides.

Comments: \_\_\_\_\_

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony: This area was used by nesting Caspian terns at least in 1982 (450 "breeding"), 1998 (70 nests), and 1999 (~114 pairs). In the latter year, the size of the colony was first estimated on 9 June but by 12 June it was preyed on by coyotes.

### Colonial Nesting Waterbirds:

Species	Years of Occupancy	Colony Size	Distance from Caspian Terns
Double-crested cormorant	irregular	variable	well away from terns
Great egret	irregular	variable	well away from terns
Black-crowned night-heron	irregular	variable	well away from terns
White-faced ibis	irregular	variable	well away from terns

Prey Base (describe general type and distance from colony): The terns forage in drainage canals (or also possible in the Hacienda and South Wilbur flood basins), where the primary fish are inland silverside, threadfin shad, Sacramento blackfish, Sacramento squawfish, mosquitofish, catfish, carp, and striped bass. Crayfish was a particularly important prey item found at Caspian tern nests at the TLDD South Evaporation Basin (R. Hansen pers. comm.).

State or Federal listed fish species potential prey? Yes or ☒ No

Species: \_\_\_\_\_

State or Federal listed wildlife/plants species associated with site: None

Management issues: \_\_\_\_\_

### Predators:

Avian (species; known occupancy/use of site): Black-crowned night-heron, northern harrier, peregrine falcon.

Mammalian (species; known occupancy/access to site): Coyote, raccoon, skunk, feral cat.

Disturbance (i.e. livestock, human, etc.): Given the site is off limits to the public, the only disturbance generally is from vehicles of drainage district employees or biologists using the perimeter dirt roads.

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## Site Management

Management History: This basin has been used for decades to store flood waters for later use in irrigating agricultural fields.

Current Management: Still managed for floodwater storage for later agricultural use.

Management Potential: Available nesting habitat is limiting. There is the potential to create suitable nesting islands, though these would be available for use only in the few years when this basin is flooded.



**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: May 16, 2002

Observer(s): Rob Hansen, Dave Shuford

Site Name: Hacienda Ranch Flood Basin, Kings County, California

Ownership: Tulare Lake Drainage District (private)

**Location:**

- Nearest City/Town: Alpaugh, Tulare County, California
- Bay/Estuary/Waterbody: An area used to store flood waters in extremely wet years for later use in irrigating agricultural fields.
- Coordinates: Latitude N 35°49.5' Longitude W 119°36.9'
- UTM Coordinates: Northing: 3968623.8 Easting: 263644.56 Zone: 11

**Size:**

Total area of island or site: The amount of habitat available when Caspian terns last nested here in 1987 is unknown.

Area of current/historical suitable habitat: This area was completely dry in 2002.

Area of potential habitat: Although the amount of habitat can vary enormously between wet and dry periods, insular nesting sites are usually very limited even in the rare years when there is extensive flooded habitat.

Distance from East Sand Island: 1216 km (755 mi)

Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

Type of site: Island Peninsula Lakeshore Rooftop Other \_\_\_\_\_

Natural or Manmade?

Site Photographs? Y or (N)

Structures present (i.e. roads, buildings, power lines, piers, etc.): There are a few power lines and small buildings in the vicinity.

Vegetative communities (i.e. forb, grass, shrub, tree): Unknown, as there appear to be no description of the nesting site in 1987.

Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Unknown, but likely of alkaline silt, the predominant soil type in the area.

Site stability: The site is extremely unstable in terms of tern nesting habitat. In most years, the area would be dry with the potential for tern nesting sites only in extremely wet years.

Topography and Site profile: Unknown, as there appear to be no description of the nesting site in 1987.

Comments: \_\_\_\_\_

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony: The only recorded nesting of Caspian terns at this site was of about "200 including many chicks" in 1987.

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
Eared grebe	irregular	variable	unknown
Western grebe	irregular	variable	unknown
Clark's grebe	irregular	variable	unknown
Double-crested cormorant	irregular	variable	unknown
Great egret	irregular	variable	unknown
Snowy egret	irregular	variable	unknown
Cattle egret	irregular	variable	unknown
Black-crowned night-heron	irregular	variable	unknown
White-faced ibis	irregular	variable	unknown
Forster's tern	irregular	variable	unknown
Black tern	irregular	variable	unknown

Prey Base (describe general type and distance from colony): The terns forage in drainage canals (or also possible in the Hacienda and South Wilbur flood basins), where the primary fish are inland silverside, threadfin shad, Sacramento blackfish, Sacramento squawfish, mosquitofish, catfish, carp, and striped bass. Crayfish was a particularly important prey item found at Caspian tern nests at the TLDD South Evaporation Basin (R. Hansen pers. comm.).

State or Federal listed fish species potential prey? Yes or **(No)**

Species: \_\_\_\_\_

State or Federal listed wildlife/plants species associated with site: None

Management issues: \_\_\_\_\_

### Predators:

Avian (species; known occupancy/use of site): Black-crowned night-heron, northern harrier, peregrine falcon.

Mammalian (species; known occupancy/access to site): Coyote, raccoon, skunk, feral cat.

Disturbance (i.e. livestock, human, etc.): Generally there would be very limited disturbance as this site is closed to public access. In years with botulism outbreaks, though, airboats are used extensively to pick up dead and sick waterbirds.

\*\*\*\*\*

## Site Management

Management History: This basin has been used for decades to store flood waters for later use in irrigating agricultural fields.

Current Management: Still managed for floodwater storage for later agricultural use.

Management Potential: Available nesting habitat is limiting. There is the potential to create suitable nesting islands, though these would be available for use only in very wet years when this basin is flooded.

**CASPIAN TERN SITE FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: May 16, 2002

Observer(s): Rob Hansen, Dave Shuford

Site Name: Tulare Lake Drainage District South Evaporation Basin, Kings and Kern counties, California

Ownership: Tulare Lake Drainage District (private)

Location:

- Nearest City/Town: Lost Hills, Kern County, and Alpaugh, Tulare County, California
- Bay/Estuary/Waterbody: The site is a set of agricultural evaporation ponds used to dispose of salt-laden drain water.

Coordinates: Latitude N 35° 47.7' Longitude W 119° 39'

UTM Coordinates: Northing: 3965006.5 Easting: 260532.88 Zone: 11

Size:

Total area of island or site: 720 ha (1779 a)

Area of current/historical suitable habitat: Same as above since creation in 1978.

Area of potential habitat: The number of cells and the depth to which they are flooded varies with climatic fluctuations and the acreage of nearby fields that are being irrigated. Such fluctuations can affect nest site suitability, as the terns favor internal levees surrounded on both sides by ponds with water.

Distance from East Sand Island: 1218 km (757 mi)

Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

Type of site: Island Peninsula Lakeshore Rooftop (Other) internal levee between cells of a set of 10 evaporation ponds

Natural or (Manmade?)

Site Photographs? (Y) or N Number Taken: \_\_\_\_\_

Structures present (i.e. roads, buildings, power lines, piers, etc.): Dirt levee roads around the evaporation ponds and a few distant power lines and large water control structures.

Vegetative communities (i.e. forb, grass, shrub, tree): There is essentially no vegetation on the pond edges or levees.

Soil substrate (i.e. sand, gravel, silt, cobble, etc.): The substrate of the pond bottoms, edges, and levees is alkaline soil/silt.

Site stability: Pond levels fluctuate with the acreage of fields that are planted depending on commodity prices and farm subsidies. Although the extent of levees on which the terns potentially could nest remains stable, their use as colony sites is currently precluded by hazing to discourage nesting because of concerns about selenium contamination in breeding birds.

Topography and Site profile: Levee tops are flat with sloping sides.

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony: Terns nested at this site at least in 1985 (~400 pairs) and 1998 (40 nests). There is limited information about reproductive success.

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
American avocet	annually	variable	
Black-necked stilt	annually	variable	
Forster's tern	irregularly	variable	

Prey Base (describe general type and distance from colony): The terns forage in drainage canals (or also possible in the Hacienda and South Wilbur flood basins), where the primary fish are inland silverside, threadfin shad, Sacramento blackfish, Sacramento squawfish, mosquitofish, catfish, carp, and striped bass. Crayfish was a particularly important prey item found at Caspian tern nests at the TLDD South Evaporation Basin (R. Hansen pers. comm.).

State or Federal listed fish species potential prey? Yes or ☒ No

Species: \_\_\_\_\_

State or Federal listed wildlife/plants species associated with site: None

Management issues: \_\_\_\_\_

### Predators:

Avian (species; known occupancy/use of site): Black-crowned night-heron, northern harrier, peregrine falcon.

Mammalian (species; known occupancy/access to site): Coyote, raccoon, skunk, feral cat.

Disturbance (i.e. livestock, human, etc.): Disturbance is intense from active hazing to discourage nesting because of concerns about selenium contamination.

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## Site Management

Management History: These ponds were established in 1978 for the purpose of disposing of salt-laden drain water from nearby agricultural fields.

Current Management: Although currently managed for the same agricultural purpose, nesting at the ponds is discouraged by the removal of potential nesting islands and by hazing because of concerns about the effect of selenium on breeding birds. The ponds are also used for commercial harvesting of brine shrimp.

Management Potential: There is very limited potential for enhancing tern nesting habitat. Management for agricultural purposes generally conflicts with maintaining suitable nesting habitat, particularly as ongoing hazing is used to discourage nesting birds because of concerns about possible selenium contamination. Similarly, a lack of insular nesting sites would make it difficult to maintain a long-term colony.

Tulare Lake Drainage District, California



Aerial photograph of the Tulare Lake Drainage District South Evaporation Basin, where Caspian terns have nested irregularly (photo taken April 15, 1994).



Marked nests of Caspian terns breeding on a levee between cells of Tulare Lake Drainage District South Evaporation Basin (photo taken by Rob Hansen in summer 1997).



Caspian tern chicks in a nest on a levee between cells of Tulare Lake Drainage District South Evaporation Basin (photo taken by Rob Hansen).



**CASPIAN TERN FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 23, 2002 Observer(s): J. Dillon, C. Pelizza, K. Molina

Site Name: Obsidian Butte, Salton Sea, California

Ownership: Imperial Valley Irrigation District

Location:

- Nearest City/Town: Westmoreland, Imperial County, California
- Bay/Estuary/Waterbody: Salton Sea
- Coordinates: Latitude N 33° 10' 23" Longitude W 115° 38' 34"
- Township, Range, Section: \_\_\_\_\_
- UTM Coordinates: Northing: 3671292.2 Easting: 626542.9 Zone: 11

Size:

Total area of island or site: 0.8-1.2 ha (2-3 a)

Area of current/historical suitable habitat: Same as above

Area of potential habitat: Same as above

Distance from East Sand Island: 1,619 km (1,006 mi)

Aerial photo obtained? Y or N Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

Type of site: Island Peninsula Lakeshore Rooftop Other \_\_\_\_\_

Natural or Manmade? \_\_\_\_\_ Site Photographs? Y or N Number Taken: 1

Structures present (i.e. roads, buildings, power lines, piers, etc.)? None

Vegetative communities (i.e. forb, grass, shrub, tree): None

Soil substrate (i.e. sand, gravel, silt, cobble, etc.) Rocks, alkaline mud, barnacles

Site stability: Stable

Topography and Site profile: Island rises 1-3 feet above water line (west winds can cause water to flow over the island).

Comments: Imperial Valley Irrigation District is working toward transferring 3-400K of water to San Diego and Los Angeles. This transfer (slated for Jan. 1, 2003) will decrease the size of the Salton Sea. The two islands would become part of the mainland shoreline.

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony: (if known) 800-1,000 pairs in a good year; usually successful

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from</u> <u>Caspian Terns</u>
Gull-billed Tern	Sporadic	~50 pairs	
California Gull		30-40 pairs	
Black Skimmer		~200 pairs	
Prey Base (describe general type and distance from colony):		<u>Tilapia, Sauger, Corvina</u> <u>(Kingklip?), Croaker</u>	

State or Federal listed fish species potential prey? Yes or No  
Species: Desert pupfish (in freshwater drainage next to Salton Sea; minimal impact from colonial birds)

State or Federal listed wildlife/plants species associated with site: None

Management issues: \_\_\_\_\_

### Predators:

Avian (species; known occupancy/use of site): California gull, Peregrine falcon,  
Mammalian (species; known occupancy/access to site): Possible raccoon and coyote

Disturbance (i.e. livestock, human, etc. Boaters, fishermen

Comments: \_\_\_\_\_

\*\*\*\*\*

## Site Management

Management History (describe): None

Current Management (describe): None

Management Potential (describe): This site has been used by Caspian terns as a nesting site. There is plenty of nesting habitat available for Caspian terns. Prey base may be the reason why birds are not nesting here at this time. There is no potential that this island could be enlarged but there is a concern of a water exchange from the Imperial Valley Irrigation District to San Diego/Los Angeles area. This would drop the water level in the Salton Sea thereby removing the water from around the island (would become part of the mainland).

Comments: Many scattered fish farms may have problems with some of the other colonial nesting birds (ex. double-crested cormorant, brown pelican, great blue heron).



Island offshore from Obsidian Butte

**CASPIAN TERN FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 23, 2002 Observer(s): J. Dillon, C. Pelizza, K. Molina

Site Name: Morton Bay, Salton Sea, Imperial County, California

Ownership: Imperial Valley Irrigation District

Location:

- Nearest City/Town: Niland, California
- Bay/Estuary/Waterbody: Salton Sea
- Coordinates: Latitude N 33° 12' 10" Longitude W 115° 35' 31"
- Township, Range, Section: \_\_\_\_\_
- UTM Coordinates: Northing: 3674650.5 Easting: 631238.56 Zone: 11

Size:

Northeast                      Southwest

Total area of island or site: Is. #1 - 0.2 ha (0.5 a); Is. #2 - 0.1 ha (0.25 a)

Area of current/historical suitable habitat: Same as above

Area of potential habitat: Same as above

Distance from East Sand Island: 1,617 km (1,005 mi)

Aerial photo obtained? Y or N Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

Type of site: Island Peninsula Lakeshore Rooftop Other

Natural or Manmade Site Photographs? Y or N Number Taken 2

Structures present (i.e. roads, buildings, power lines, piers, etc.)? None

Vegetative communities (i.e. forb, grass, shrub, tree): None

Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Silt, alkaline mud (barnacles have been mixed the alkaline mud to reduce egg damage)

Site stability: Stable

Topography and Site profile: Island rises 3-4 feet above water line.

Comments: Imperial Valley Irrigation District is working toward transferring 3-400K of water to San Diego and Los Angeles. This transfer (slated for Jan. 1, 2003) will decrease the size of the Salton Sea. The two islands would become part of the mainland shoreline.

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony (if known): Nesting on northeast island toward west end; ~ 40 pairs with some hatching success.

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
Gull-billed Tern	Sporadic	Several pairs	
California Gull		30 pairs	

Prey Base (describe general type and distance from colony): Tilapia, Sauger, Corvina (Kingklip?), Croaker

State or Federal listed fish species potential prey? (Yes) or No

Species: Desert pupfish (in freshwater drainage next to Salton Sea; minimal impact from colonial birds).

State or Federal listed wildlife/plants species associated with site: None

Management issues: \_\_\_\_\_

### Predators:

Avian (species; known occupancy/use of site): California gull, Peregrine falcon,

Mammalian (species; known occupancy/access to site): Raccoon, coyote, feral dogs

Disturbance (i.e. livestock, human, etc.): Campers on dike west of islands, fishermen, pelican roosting area (trampling)

Comments: \_\_\_\_\_  
\*\*\*\*\*

## Site Management

Management History (describe): Barnacles added to alkaline mud

Current Management (describe): None

Management Potential (describe): This site is currently used by Caspian terns as a nesting site. These two small islands are completely available to Caspian terns. There is a potential that these islands could be enlarged but there is a concern of a water exchange from the Imperial Valley Irrigation District to San Diego/Los Angeles area. This would drop the water level in the Salton Sea thereby removing the water from around the islands (would become part of the mainland). Prey base may also be an issue.



Southwest Island



Northeast Island (Caspian tern nest site)



**CASPIAN TERN FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 23, 2002 Observer(s): J. Dillon, C. Pelizza, K. Molina

Site Name: Headquarters Unit "D" Pond, Salton Sea, Imperial County, California

Ownership: Department of Interior, U.S. Fish and Wildlife Service

Location:

- Nearest City/Town: Westmoreland, California
- Bay/Estuary/Waterbody: Salton Sea
- Coordinates: Latitude N 33° 10' 50" Longitude W 115° 37' 06"
- Township, Range, Section: \_\_\_\_\_
- UTM Coordinates: Northing: 3672154.0 Easting: 628811.2 Zone: 11

Size:

Total area of island or site: 5 islands; each 0.05 - 0.1 ha ( - ¼ a)

Area of current/historical suitable habitat: Same as above

Area of potential habitat: Same as above

Distance from East Sand Island: 1,619 km (1,006 mi)

Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

Type of site: Island Peninsula Lakeshore Rooftop Other \_\_\_\_\_

Natural or Manmade Site Photographs? (Y) or N Number Taken: 2

Structures present (i.e. roads, buildings, power lines, piers, etc.)? None

Vegetative communities (i.e. forb, grass, shrub, tree): Iodine bush

Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Alkaline mud, silt

Site stability: Stable

Topography and Site profile: There is a 1-3 foot rise above the water line.

Comments: Ponds are filled with fresh water purchased from the Imperial Valley Irrigation District; "D" Pond is near the end of pond transfers so water has a higher saline content.

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony (if known): In past, as many as 1,000 pairs, Caspian terns favor western 3 islands.

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
Black skimmer		~500 pairs	
Gull-billed tern		~70-80 pairs	
Laughing gull		~2-3 pairs	
California gull		~12-15 pairs	

Prey Base (describe general type and distance from colony): Tilapia, Sauger, Corvina (Kingklip?), Croaker

State or Federal listed fish species potential prey? Yes or No

Species: Desert pupfish (in freshwater drainage next to Salton Sea; minimal impact from colonial birds).

State or Federal listed wildlife/plants species associated with site: Yuma clapper rail

Management issues: There should not be any issues. Ponds are managed for rail habitat in the upper portion of the pond series.

### Predators:

Avian (species; known occupancy/use of site): California gull, Peregrine falcon,

Mammalian (species; known occupancy/access to site): Possible raccoon, skunk and coyote

Disturbance(i.e. livestock, human, etc.) : Access closed to public except west shore along Rock Trail (intermittent use by public).

Comments: Islands created in 1995; used the same year created by colonial nesting birds.

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## Site Management

Management History (describe): Creation of islands.

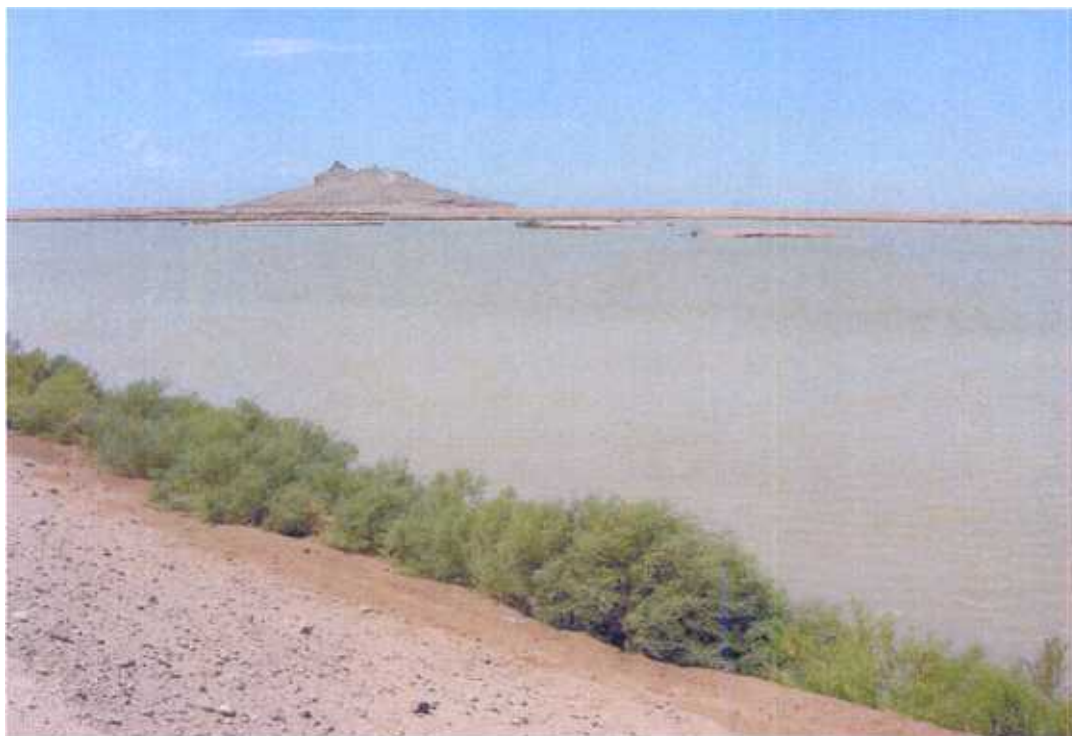
Current Management (describe): Water management and vegetation management.

Management Potential (describe): This site is currently used by Caspian terns as a nesting site. There are currently five islands in this one pond. Basically all square footage on each island is available for Caspian tern nesting. The islands could be enlarged or connected but current use is not high enough to warrant changing.

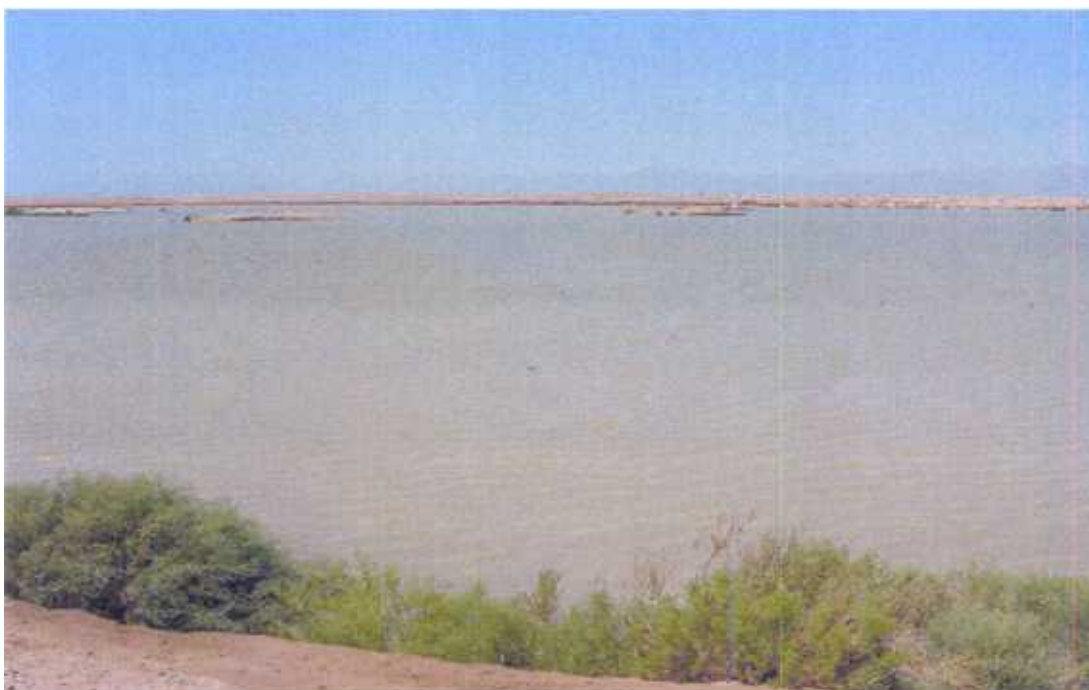
Comments: Many scattered fish farms may have problems with some of the other colonial nesting birds (ex. double-crested cormorant, brown pelican, great blue heron).

**Headquarters Unit “D” Pond Islands,  
Salton Sea NWR, California**

Photos taken July 23, 2002



**Headquarters Unit “D” Pond (west three islands)**



**Headquarters Unit “D” Pond (east two ponds)**

**CASPIAN TERN FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 23, 2002 Observer(s): J. Dillon, C. Pelizza, K. Molina

Site Name: Mullet Island, Salton Sea, Imperial County, California

Ownership: Department of Interior, U.S. Fish and Wildlife Service

Location:

- Nearest City/Town: Niland, California
- Bay/Estuary/Waterbody: Salton Sea
- Coordinates: Latitude N 33° 13' 31" Longitude W 115° 36' 27"
- Township, Range, Section: \_\_\_\_\_
- UTM Coordinates: Northing: 3677125.8 Easting: 629755.25 Zone: 11

Size:

Total area of island or site: 3.2 ha (8+ a)

Area of current historical suitable habitat: ~ 0.8-1.2 ha (2-3 a)

Area of potential habitat: ~ 0.8-1.2 ha (2-3 a)

Distance from East Sand Island: 1,614 km (1,003 mi)

Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

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**Site Description**

Type of site: Island Peninsula Lakeshore Rooftop Other

Natural or Manmade? Site Photographs? Y (or) N Number Taken: 5

Structures present (i.e. roads, buildings, power lines, piers, etc.)? Foundation from mullet cannery

Vegetative communities (i.e. forb, grass, shrub, tree): None

Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Rock, silt, alkaline mud

Site stability: Stable

Topography and Site profile: Island rises to 60+ feet above water line

Comments: Imperial Valley Irrigation District is working toward transferring 3-400K of water to San Diego and Los Angeles. This transfer (slated for Jan. 1, 2003) will decrease the size of the Salton Sea. Mullet Is. would become part of the mainland shoreline.

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony (if known) : Nest east end of island; peak number was 1,500 pairs; 1997 last year nesting occurred.

### Colonial Nesting Waterbirds:

<u>Species</u>	<u>Years of Occupancy</u>	<u>Colony Size</u>	<u>Distance from Caspian Terns</u>
Gull-billed Tern	Sporadic	<50 pr	
Black Skimmer	Sporadic	~300 pr	
D-C Cormorant	Sporadic	5,200 pr in 1999	
Gulls	Sporadic	30-40 pr	

Prey Base (describe general type and distance from colony): Tilapia, Sauger, Corvina (Kingklip?), Croaker

State or Federal listed fish species potential prey? (Yes) or No

Species: Desert pupfish (in freshwater drainage next to Salton Sea; minimal impact from colonial birds)

State or Federal listed wildlife/plants species associated with site: None

Management issues: \_\_\_\_\_

### Predators:

Avian (species; known occupancy/use of site): California gull, Peregrine falcon, great blue heron.

Mammalian (species; known occupancy/access to site): None

Disturbance (i.e. livestock, human, etc.) : Boaters, fishermen

Comments: \_\_\_\_\_

\*\*\*\*\*

## Site Management

Management History (describe): None

Current Management (describe): None

Management Potential (describe): This site has been used by Caspian terns as a nesting site. There is plenty of nesting habitat available for Caspian terns. Prey base may be the reason why birds are not nesting here at this time. There is no potential that this island could be enlarged but there is a concern of a water exchange from the Imperial Valley Irrigation District to San Diego/Los Angeles area. This would drop the water level in the Salton Sea thereby removing the water from around the island (would become part of the mainland).



**Southeast portion of Mullet Island**



**Southeast side of Mullet Island**

**CASPIAN TERN FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 23, 2002 Observer(s): J. Dillon, C. Pelizza, K. Molina

Site Name: Unit 1-A4, Salton Sea, Imperial County, California

Ownership: Department of Interior, U.S. Fish and Wildlife Service

Location:

- Nearest City/Town: Westmoreland, California
- Bay/Estuary/Waterbody: Salton Sea
- Coordinates: Latitude N 33° 05' 22" Longitude W 115° 42' 25"
- Township, Range, Section: \_\_\_\_\_
- UTM Coordinates: Northing: 3661946.2 Easting: 620673.75 Zone: 11

Size:

- Total area of island or site: Island proposed for creation
- Area of current/historical suitable habitat: None
- Area of potential habitat: 0.8 - 1.2 ha of island habitat planned (2-3 a)

Distance from East Sand Island: 1,625 km (1,010 mi)

Aerial photo obtained? Y or N Date/Source of Aerial Photo: \_\_\_\_\_

\*\*\*\*\*

**Site Description**

Type of site: Island Peninsula Lakeshore Rooftop Other \_\_\_\_\_

Natural or Manmade Site Photographs? Y or N Number Taken: 1

Structures present (i.e. roads, buildings, power lines, piers, etc.)? None

Vegetative communities (i.e. forb, grass, shrub, tree): None because island not created.

Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Alkaline mud, silt

Site stability: \_\_\_\_\_

Topography and Site profile: \_\_\_\_\_

Comments: Ponds are filled with fresh water purchased from the Imperial Valley Irrigation District; Pond 1-B4 is near the end of pond transfers so water has a higher saline content.



## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony (if known): None

### Colonial Nesting Waterbirds:

Species      Years of Occupancy   Colony Size   Distance from Caspian Terns

Prey Base (describe general type and distance from colony): Tilapia, Sauger, Corvina (Kingklip?),  
Croaker

State or Federal listed fish species potential prey? ☒ Yes or No

Species: Desert pupfish (in freshwater drainage next to Salton Sea; minimal impact  
from colonial birds).

State or Federal listed wildlife/plants species associated with site: Yuma clapper rail

Management issues: There should not be any issues. Ponds are managed for rail habitat in  
the upper portion of the pond series.

### Predators:

Avian (species; known occupancy/use of site): California gull, Peregrine falcon

Mammalian (species; known occupancy/access to site): Possible raccoon and coyote

Disturbance (i.e. livestock, human, etc.): Access closed to public.

Comments: No islands at this time but plans are being developed.

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## Site Management

Management History: Managing water levels in impoundment.

Current Management: Future - create islands for colonial birds.

Management Potential: The Salton Sea NWR has plans to develop islands in the adjacent pond for colonial nesting birds in the near future. Islands could be created to provide more nesting habitat. Ponds are filled with fresh water purchased from the Imperial Valley Irrigation District. Therefore, even with a water transfer, there should be ponds and fresh water available to Caspian terns .

Comments: Many scattered fish farms may have problems with some of the other colonial nesting birds (ex. double-crested cormorant, brown pelican, great blue heron).



**CASPIAN TERN FEASIBILITY ASSESSMENT  
FIELD FORM**

Date: July 23, 2002 Observer(s): J. Dillon, C. Pelizza, K. Molina

Site Name: Unit 1-B4, Salton Sea, Imperial County, California

Ownership: Department of Interior, U.S. Fish and Wildlife Service

Location:

- Nearest City/Town: Westmoreland, California
- Bay/Estuary/Waterbody: Salton Sea
- Coordinates: Latitude N 33° 05' 19" Longitude W 115° 42' 41"
- Township, Range, Section: \_\_\_\_\_
- UTM Coordinates: Northing: 3661849.0 Easting: 620260.44 Zone: 11

Size:

Total area of island or site: 0.4 ha (1 a)

Area of current/historical suitable habitat: Same as above

Area of potential habitat: Same as above

Distance from East Sand Island: 1,625 km (1,010 mi)

Aerial photo obtained? Y or (N) Date/Source of Aerial Photo: \_\_\_\_\_

\*\*\*\*\*

**Site Description**

Type of site: Island Peninsula Lakeshore Rooftop Other

Natural or Manmade Site Photographs? (Y) or N Number Taken: 1

Structures present (i.e. roads, buildings, power lines, piers, etc.)? None

Vegetative communities (i.e. forb, grass, shrub, tree): Shrubs, Iodine bush

Soil substrate (i.e. sand, gravel, silt, cobble, etc.): Alkaline mud, silt

Site stability: Stable

Topography and Site profile: Island rises 4-5 feet above water line.

Comments: Ponds are filled with fresh water purchased from the Imperial Valley Irrigation District; Pond 1-B4 is near the end of pond transfers so water has a higher saline content.

## Fish and Wildlife Resources

Specific location, size, reproductive success of Caspian tern colony (if known): Did not nest but were present in 2002.

### Colonial Nesting Waterbirds:

Species	Years of Occupancy	Colony Size	Distance from Caspian Terns
Gull-billed Tern	2	~40 pairs	
Black Skimmer		~80-100 pairs	

Prey Base (describe general type and distance from colony): Tilapia, Sauger, Corvina (Kingklip?), Croaker

State or Federal listed fish species potential prey? Yes or No

Species: Desert pupfish (in freshwater drainage next to Salton Sea; minimal impact from colonial birds).

State or Federal listed wildlife/plants species associated with site: Yuma clapper rail

Management issues: There should not be any issues. Ponds are managed for rail habitat in the upper portion of the pond series.

### Predators:

Avian (species; known occupancy/use of site): California gull, Peregrine falcon

Mammalian (species; known occupancy/access to site): Possible raccoon and coyote

Disturbance (i.e. livestock, human, etc.): Access closed to public.

Comments: Birds immediately began using island after construction.

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## Site Management

Management History: Created island

Current Management: Maintaining island for colonial bird colonies

Management Potential: This site has not been used by nesting Caspian terns but birds were present 2002. More islands could be created to provide more nesting habitat. Ponds are filled with fresh water purchased from the Imperial Valley Irrigation District. Therefore, even with a water transfer, there should be ponds and fresh water available to Caspian terns. The Salton Sea NWR has plans to develop islands in the adjacent pond for colonial nesting birds in the near future.

Comments: Many scattered fish farms may have problems with some of the other colonial nesting birds (ex. double-crested cormorant, brown pelican, great blue heron).



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